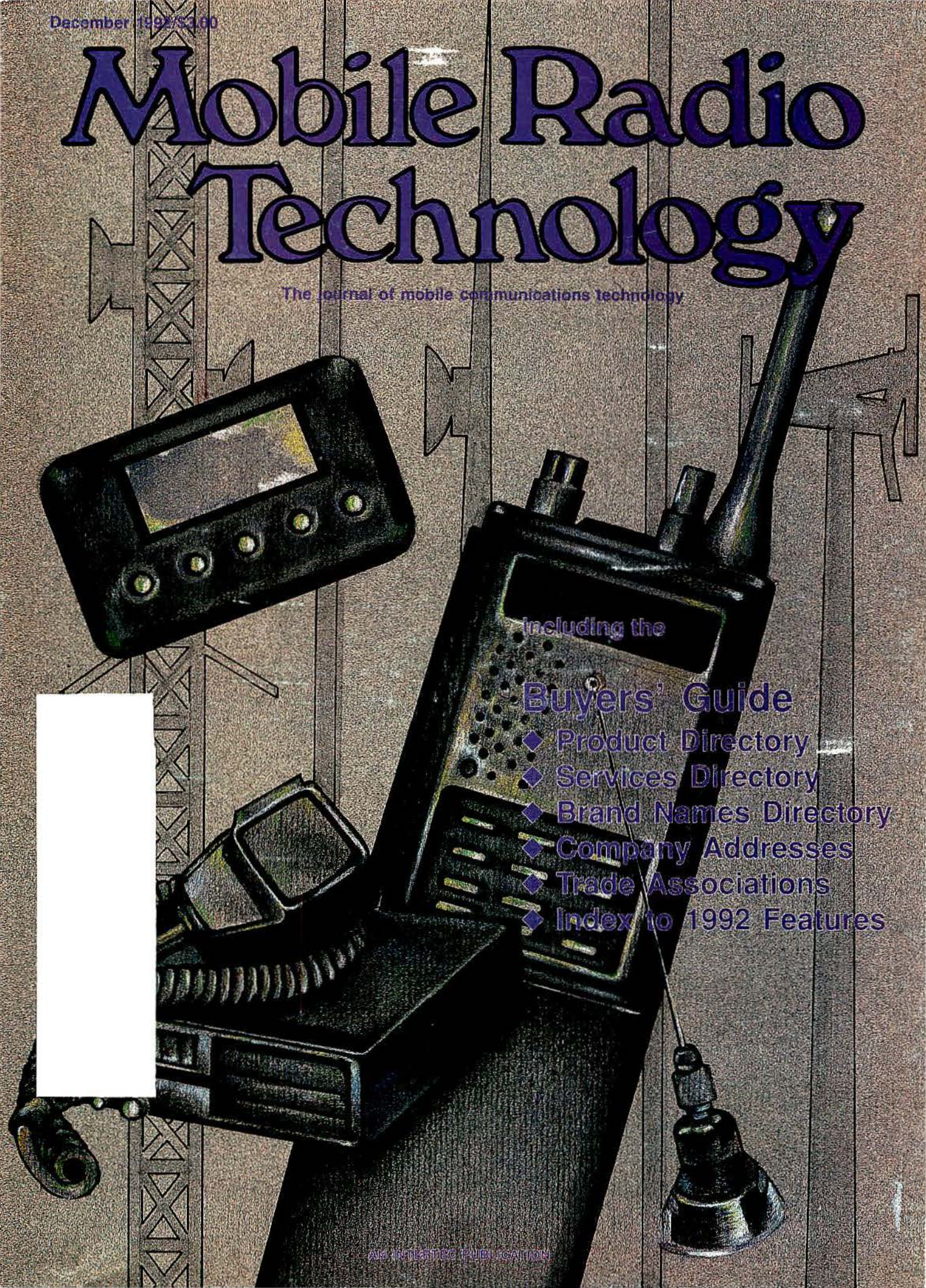
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Mobile Radio Technology

The journal of mobile communications technology



Including the

Buyers' Guide

- Product Directory
- Services Directory
- Brand Names Directory
- Company Addresses
- Trade Associations
- Index to 1992 Features

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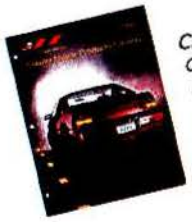
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The 10-site radio controller



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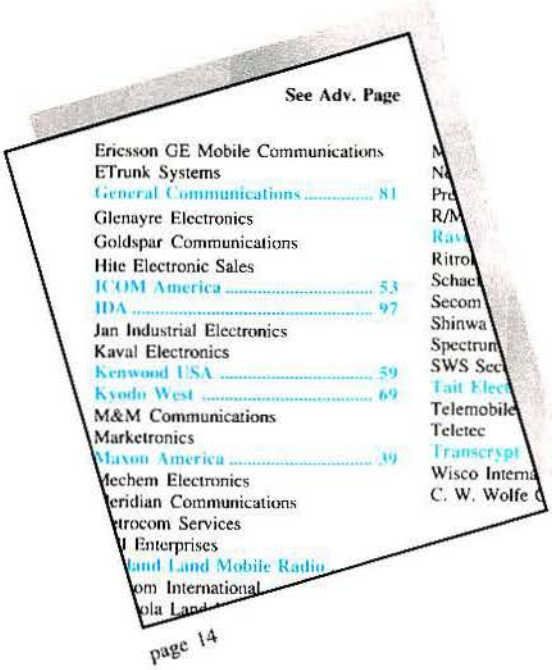
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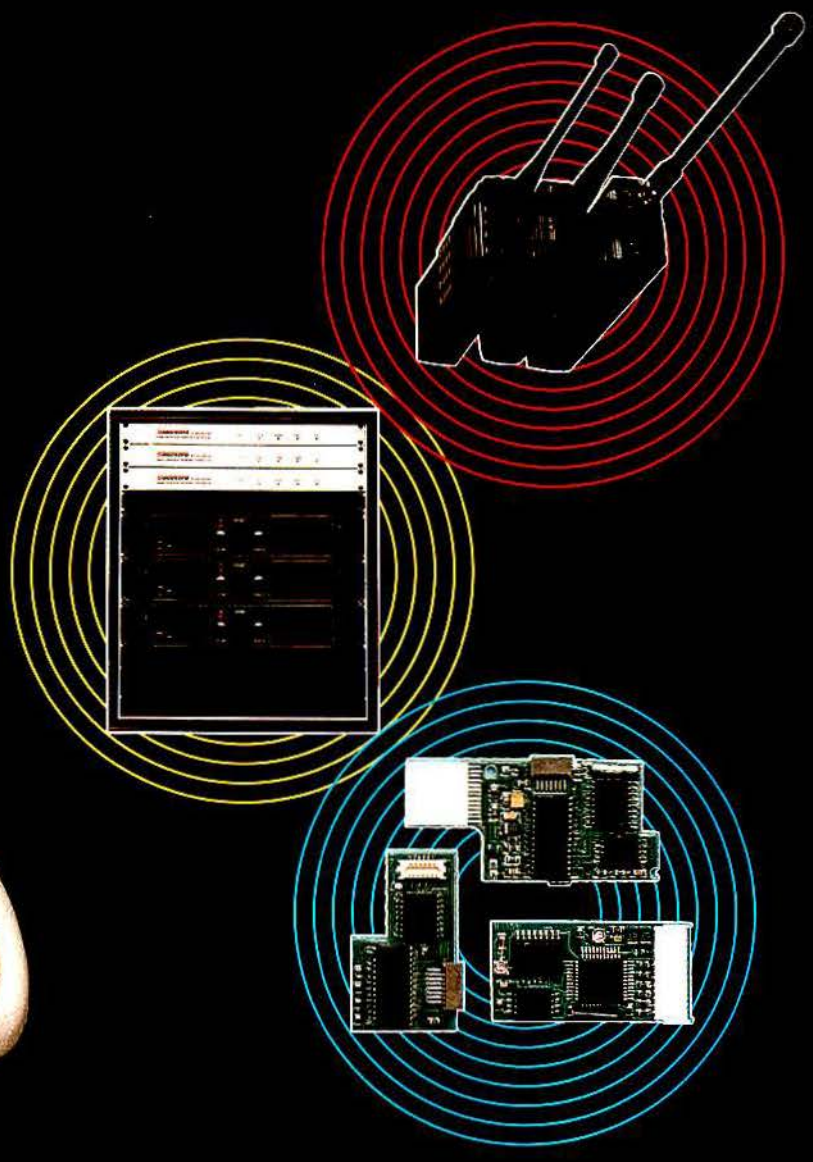
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How do you use the Buyers' Guide?

On the cover: *MRT's* sixth annual Buyers' Guide serves as the year-round reference for buying in 1993. More than 800 companies are listed representing more than 100 categories of products and services.

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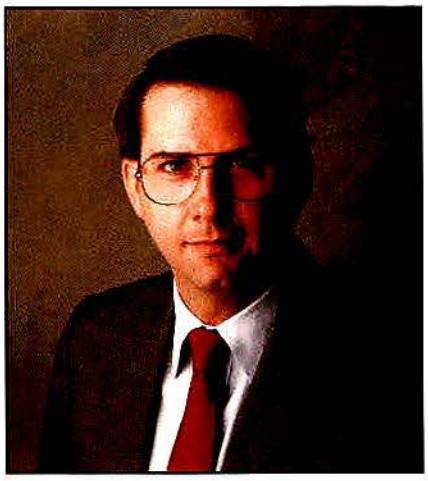
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Spectrum refarming



The FCC has placed seven spectrum refarming proposals before the public for comment.

Refarming refers to changing the frequency allocations and technical standards for private radio communications service-providers and users.

The commission has proposed to:

(1) create new private land mobile radio channels by splitting existing channels between 72MHz and 512MHz.

(2) create a marketplace mechanism giving applicants the ability to obtain channel exclusivity in the 150MHz-174MHz and 450MHz-470MHz bands.

(3) designate a block of channels for wide-area, highly spectrum-efficient operations.

(4) provide users technical flexibility to convert to more advanced technology.

(5) introduce three broad radio services to replace or supplement the 19 existing private land mobile radio services.

(6) reduce permissible power and antenna height to increase frequency reuse.

(7) substitute a new, simpler and clearer Part 88 for Part 90.

The objectives of these proposals are to reduce congestion, to meet future communications capacity needs and to permit, facilitate and encourage licensees to be spectrum-efficient.

▶ *Equipment sales*—Splitting existing channels from 25kHz to 6.25kHz or less is expected to create as many as 3,100 new channels, depending on the location. To ease the effect on existing users, the FCC wants to allow existing users many years to make the transition to the new equipment that will be required. Still, radio equipment manufacturers will benefit from the creation of new channels.

▶ *Stronger voice*—Reducing the number of radio services from 19 to three may reduce the number of trade associations that represent private radio to as few as three.

Each of the 19 radio services has a block of frequencies. Thus, government agencies and businesses eligible for FCC licenses are represented by at least 19 trade associations that defend their interests in those frequencies.

The trade associations have great difficulty reaching a consensus on regulatory matters. As a result, the FCC and Congress hear multiple voices with often differing opinions representing private radio. One voice would be best, but three voices would be better than 19.

▶ *What's in a name?*—The FCC proposes to name the three radio services Public Safety, Non-Commercial and Specialized Mobile Radio.

There probably is no getting around the confusion that *public safety* radio is a *private* radio service. The name Public Safety is too well accepted to change it.

Non-Commercial and Specialized Mobile Radio are terrible names.

Non-Commercial refers to the fact that businesses with their own FCC licenses for communications systems do not sell radio services, they sell some other product or service. They use radio to boost their productivity, employee safety or both. Still, the businesses are commercial, so the name Non-Commercial does not fit.

And nobody knows what *specialized mobile radio* means.

Even one of the trade associations that represent SMR operators dropped SMR from its name, becoming the American Mobile Telecommunications Association.

Maybe the SMR operators can come up with a more descriptive name for a business that offers radio communications service for hire.

▶ *Exit SIRSA; enter ITA*—One of the other trade associations changed its name last month. The Special Industrial Radio Service Association (SIRSA) became the Industrial Telecommunications Association (ITA). This frees the association from a name that ties it directly with a single one of the 19 private radio services.

ITA could be positioning itself to accept mergers with other associations that will lose their turf if and when the radio services are consolidated.

—Don Bishop

The private radio services

Communications services owned by the federal government are not part of private radio. Neither are common carrier services, such as cellular mobile telephone and radio common carrier (RCC) paging services.

Private radio includes two-way radio and radiopaging communications services owned by state and local governments. Among them are the public safety agencies, such as police and fire departments and emergency medical services.

Businesses with two-way radio, radiopaging and mobile telephone equipment that they use under the authority of their own FCC licenses are private radio users.

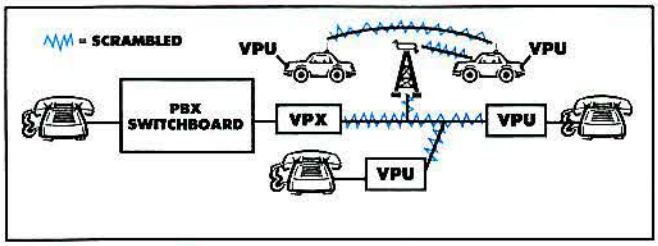
Specialized mobile radio (SMR) and private carrier two-way radio system operators offer two-way radio and non-cellular mobile telephone services to other businesses and (in the case of SMR) the public. The SMR and private carrier operators hold FCC private radio licenses.

Private carrier paging (PCP) system operators are another type of private radio operator. Under the authority of a private radio license, they offer a radiopaging service similar to the RCC paging service.

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Letters to the editor

Trunking:

Radio users who move from crowded conventional radio channels to trunked radio systems often are amazed by the new performance offered by trunking technology's group approach.

Although trunking can provide many benefits, it can be dangerous.

On a conventional radio channel, you know who is on the channel and how busy it is on a daily basis. If it is tough to communicate on the channel during busy periods, you are getting a fair warning of how restricted the channel will become when it gets *really* busy, such as when public safety agency officers and employees must respond to a large-scale emergency.

Trunking tends to hide a radio system's daily loading variations. When it is new, the system has plenty of extra capacity. As the system ages and new mobiles and portables are added, a point is reached where extra capacity is limited.

Unlike conventional radio systems where loading that approaches system capacity is evident and alerts the "powers of purchasing" of the need to increase the capacity, increased loading that approaches a trunking system's full capacity is not as apparent.

Loading that fills the capacity with routine communications may leave a public safety radio trunking system incapable of handling traffic generated by a large-scale emergency response. The result during such a response is that vital radio messages are delayed.

A trunking group is not a radio channel.

With trunking, you must pay much more attention to system loading and to providing extra capacity for heavy communications periods. Unlike a conventional radio system, a trunking system does not generate user complaints that previously have helped to justify system expansion.

Rand G. Ellis
Marketing Manager
Radio Systems
Fort Lauderdale, FL

For related information, refer to the following articles:

"Pre-emptive Trunking Assigns Channels By Traffic Priority," Don R. Precure, P.E., January 1987.

"Important Considerations For Public Safety Trunking," Dr. Gregory M. Stone and David N. Gelyana, June 1987.

"Public Safety Communications and Trunking," Dr. Gregory M. Stone and David N. Gelyana, July 1988.

—DB

Airfone license:

In the September issue, you reported that GTE Airfone's application for an

Mobile Radio Technology
The journal of mobile communications technology

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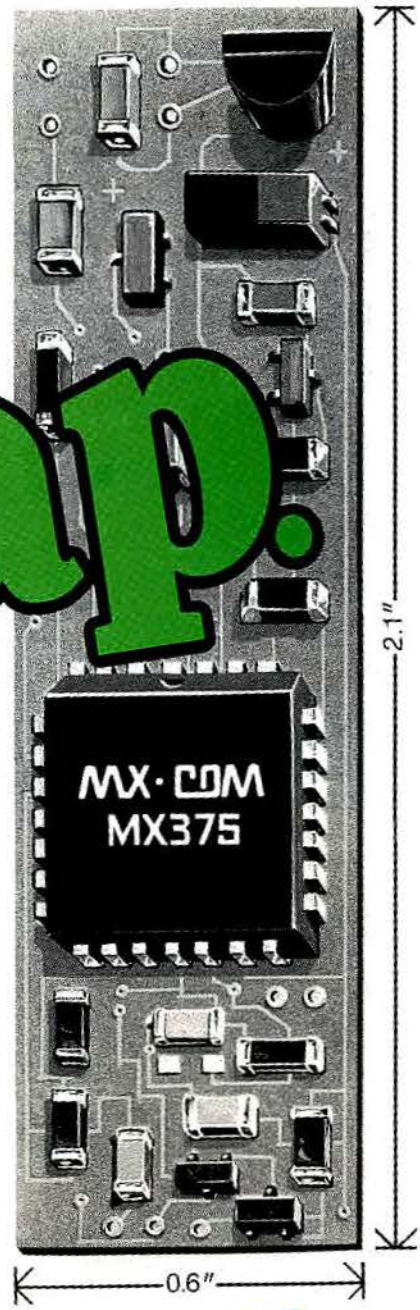
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FCC license was still pending. On the contrary, we have had an FCC license for more than a year. The FCC granted GTE Airfone a nationwide air-to-ground telephone service license on July 23, 1991.

Prior to receiving this license, GTE Airfone had operated under experimental authority by the FCC.

Sharon Cohen-Hagar
Manager of Public Affairs
GTE Airfone
Oak Brook, IL

Fast Fact Card Comments:

The two toughest problems facing me on the job are:

- troubleshooting surface-mount devices (SMDs) on printed circuit boards where the SMDs are on the chassis side of the board, as well as the visible side.
- bad schematics with inadequate information.

Richard J. Wolf
Lead Technician
Radicom
McHenry, IL

The two toughest problems facing me on the job are:

- convincing older system users to invest in trunking systems.
- convincing users that the horrible audio quality of DES-XL is normal, and nothing is wrong with the radio.

David A. Williams
Electronics Technician
Argo Fire Department
Trussville, AL

The two toughest problems facing me on the job are:

- convincing customers to buy good-quality radios instead of cheap ones that do not hold up to everyday use.
- radio sales by discount stores and auto parts outlets.

Dale Hughes
Owner
Hughes Electric
Ketchikan, AK

The two toughest problems facing me on the job are:

- a lack of awareness in some quarters about automobile electrical noise sources that affect communication performance.
- a lack of standards from vehicle manufacturers about electrical noise.

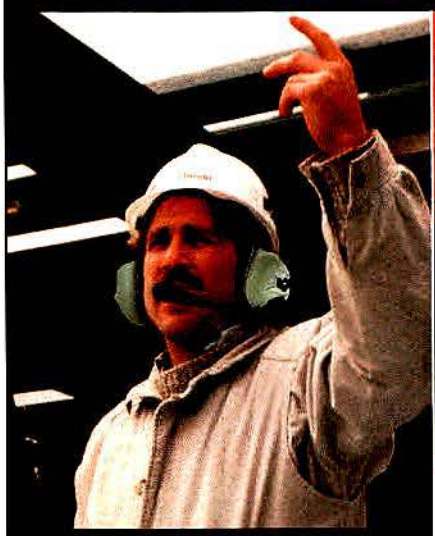
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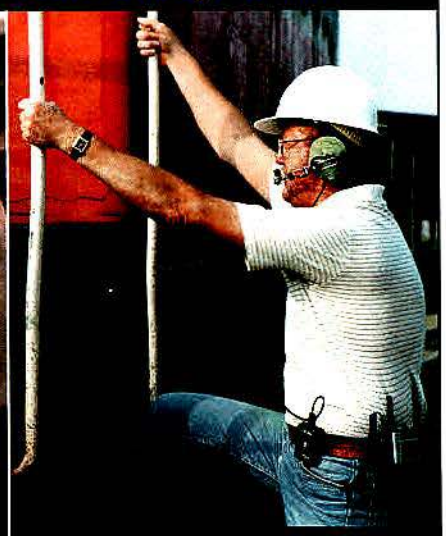
The two toughest problems facing me on the job are:

- attaining sole-source replacement parts from offshore manufacturers.
- competing with fly-by-night dealers in today's poor market.

Paul B. Boudreau
President
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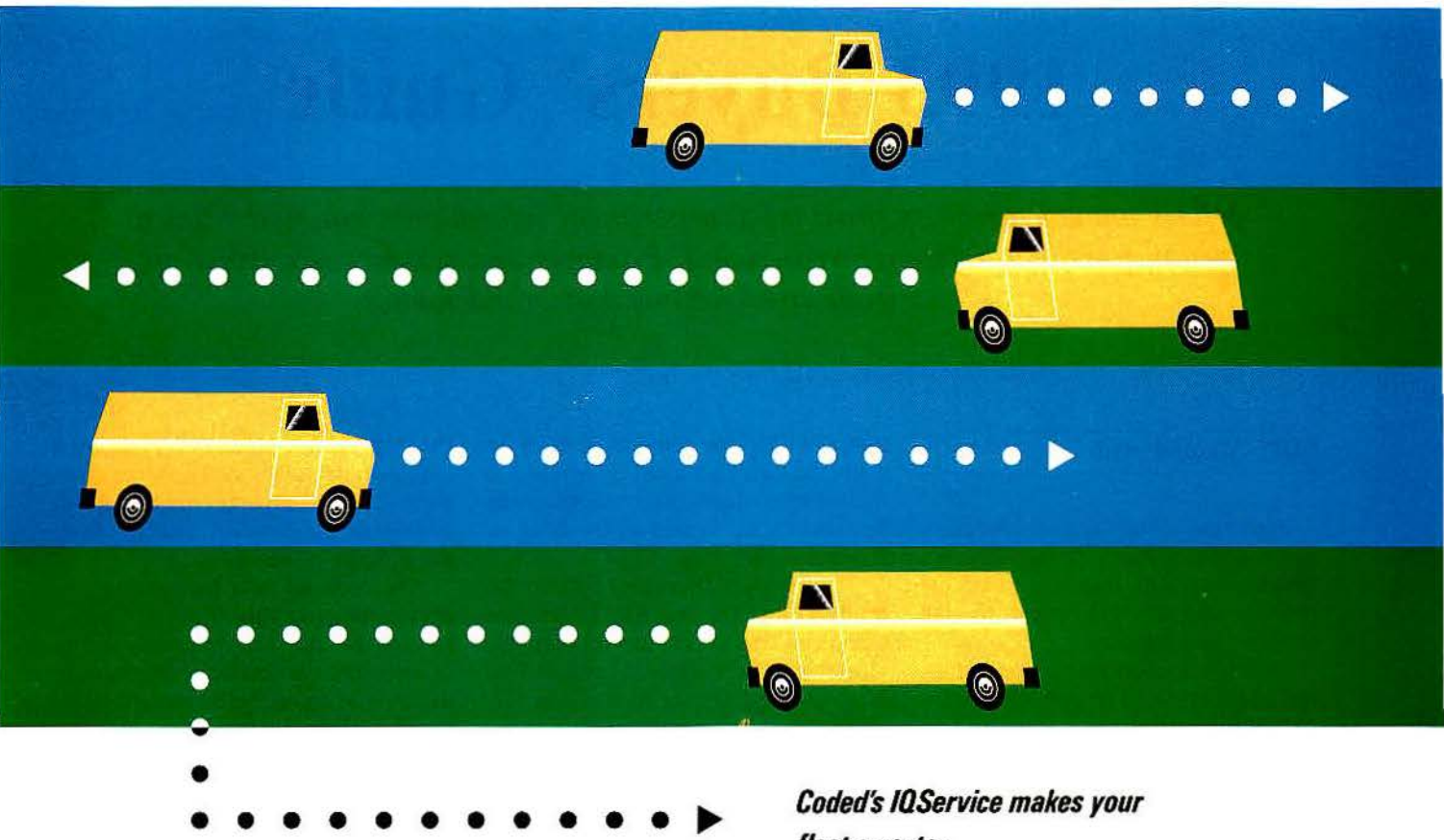
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6th Annual

1993 Buyers' Guide

MRT's annual directory provides you pertinent information you will want to retain for quick reference year-round. Products and services are listed, as well as trade associations and brand names.

MRT editorial staff

Welcome to the annual directory issue of *Mobile Radio Technology*. We believe you will find it a complete product and services source for the mobile radio industry.

Industry authorities and our editorial advisory board helped us to establish informative categories and to compile data. We mailed questionnaires to suppliers and service companies, and we asked them to list the products and services they offer. This "Buyers' Guide" is designed to be an easily used reference for an entire year. It is divided into five sections: the **Product Directory,** the **Services Directory, Company Addresses, Brand Names Directory** and **Trade Associations**.

Product Directory **14**
Services Directory **44**
Company Addresses **48**
Brand Names Directory **94**
Trade Associations **100**

The **Product Directory** lists more than 90 categories of equipment and suppliers. Under each heading is a complete list of the companies that have that particular product available. More than 800 companies are listed.

Under the product headings, you will find companies listed in blue. These companies are advertisers in this issue, and the page location serves as a direct reference for additional information directly from the manufacturers, either by contacting them or using the Fast Fact number assigned to the advertisements and returning the Fast Fact Card bound in the back of this issue. (See page 131.)

The **Services Directory** follows the Product Directory and lists 11 services categories and the companies that provide them. Here again, you will find blue listings for advertisers in this issue.

Following the product and services directories, you will find an alphabetized index of **Company Addresses**, as well as phone numbers for convenience, for all the companies listed in this "Buyers' Guide." Regional sales contacts are listed for advertisers in this issue.

The **Brand Names Directory** is an alphabetized list of brand names in the mobile radio industry and the associated manufacturers of these products.

As part of our directory, *MRT* sorts out the various trade groups in mobile radio in our **Trade Associations** listing. Here you will find the addresses and phone numbers of the numerous trade associations representing mobile radio interests.

For your convenience, two Fast Fact Cards are bound into this issue. Each card is valid for a full year. By circling the appropriate numbers associated with manufacturers' and services companies' advertisements, you can obtain additional information directly from the product or service source.

The editorial staff has made every attempt to make this "Buyers' Guide" an accurate and comprehensive listing of suppliers and services companies in the mobile radio field. Nevertheless, because of the number of suppliers in this field and because new entrants always are surfacing in this industry, some companies or organizations and products or services may have been overlooked. If you represent one of these companies or organizations, please send your company's name and address to Pat Blanton, *MRT* Directory Editor, P.O. Box 12901, Overland Park, KS 66282-2901. This will help to make the "Buyers' Guide" an even better reference.

To be listed in next year's "Buyers' Guide," send your company name and address to Pat Blanton, Directory Editor, Mobile Radio Technology, P.O. Box 12901, Overland Park, KS 66282-2901.

FREEMAN ENGINEERING ASSOCIATES, INC.

presents ***integrated paging and voice page review*** including:

- Analog and Digital Paging
- Trunk Concentration
- Outdial with Call Forwarding
- TNPP Networking
- Redundant Storage
- T-Span and Analog Trunk Compatibility



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To find out more please call, write or fax! Your communication needs are important to us!

Circle (10) on Fast Fact Card

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For more information on the products and services **listed in blue**, turn to the page listed with the entry to find the company's advertisement. Note the Fast Fact number assigned to the advertisement, and circle this number on the Fast Fact Card found on page 131 in this issue and return the card to **MRT**. See example below. The cards are valid for one year.



Circle (900) on Fast Fact Card

BEST





MORE FEATURES AT LOWER COST . . .

FCC/ DOC APPROVED

- Built-in programming keyboard and digital display assure trouble free set-up. No computer or computer knowledge required.
- 90 Number Speed Dialer
- Last Number Redial
- Hookflash
- User programmable CW Identifier
- Automatic busy signal/dialtone disconnect
- Ringout: sounds like a telephone
- Regenerated DTMF or pulse dialing
- COS Input: allows Carrier, CTCSS or DPL operation
- Resettable call limit and activity timers
- Line in use detection/call waiting
- 1-800 toll override
- Toll restrict
- DTMF signaling AND MORE

MODEL 8200: Full or Half Duplex Interconnect, Repeater Maker, Remote Base, Paging, and Selective Calling.

MODEL 9800: Vox Control Station (EVD optional) or Half Duplex Interconnect, Repeater Maker, Remote Base, Paging, and Selective Calling.

Land to mobile and mobile to mobile signaling options (both models):

- 2 tone 1000 call
- 5/6 tone 1000 call
- CTCSS 38 call

Phone Patches In The Business !

CSI®

Connect Systems, Inc.
2064 Eastman Ave., Suite 113, Ventura, CA 93003

IN CANADA:
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EASTCOM (416) 850-2550

INTERNATIONAL:
JESCOM (415) 574-1421

Turn your two-way system into a phone system today! **CALL 1-800-545-1349 • FAX (805) 642-7271**

Circle (11) on Fast Fact Card

Product Directory

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AIR CONDITIONING FOR SHELTERS

FWT

AIRTIME BILLING EQUIPMENT

AmeriCom
CES
CyberSym Control Systems
Eastcom Industries
EZ Soft Business Software
IDA 97
In-Touch Management Systems

LYNN-ARTHUR
OPERATIONS SUPPORT SYSTEMS

Lynn-Arthur Associates
Master Communications
Micro-Quick Systems
Peacocks Radio & Wilds Computer Services
SMC Wireless
Subscriber Computing
Trident Micro Systems 67
Zetron 51

ALARM AND SECURITY SYSTEMS

Appropriate Data Communications
Barnett Engineering
Berry Controls
Cellnet Communications
Com-Ser Labs
Communications & Signals
Commuwell International
Compuquest
Control Signal 16
CyberSym Control Systems
Jack Daniel Company
Danmax Communication
Dataprobe
Decibel Products 45
Dinet
Falcon Tower Fabricators
Fitzgerald Telecom
Goldspar Communications
Gronel Associates
Jan Industrial Electronics
Kintek Custom Products
Lucas Ledex
Manon Engineering
Mobile Installers Products
Motorola Land Mobile Products Sector
Mountain Communications
PageTek
Paging Products International
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Richardson Electronics Cetron Communications Div.
RTI Communications
Sigtone
Tekno Industries
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TTI
Vansco Electronics
Voice of the Road
Whelen Engineering
Wholesale Cellular USA
Wisco International
Zetron 51

ALTERNATE ENERGY SOURCES

Photovoltaic, Thermoelectric, Wind-Driven and Fuel-Powered Generators

Atlantic Solar Products
Auto-Comm Engineering
Communications West
CSC Power Systems
Encom Radio Services
Exeltech
Goldspar Communications
Heliotrope General
Henry Radio 107
Manon Engineering
Northern Power Systems
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SES 106

SIEMENS

Siemens Solar Industries 72
Solarex
Statpower Technologies
Suncleo
Teledyne Energy Systems
Telemobile
Wisco International
Zirco

AMPLIFIERS

RF Power, Mobile and Portable Amplifier-Chargers

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Air Comm
Antenna Farm
California Radio
Cartwright Communications 19
Celwave 20, 21
Communications & Signals
Communications Associates 99
D&I Communications 96
Danmax Communication
db Mobile
Decibel Products 45
Henry Radio 107
Hutton Communications 66
Jan Industrial Electronics
Janel Labs
E. F. Johnson Company
Kenwood USA 39
Lunar Industries
Marketronics
Meridian Communications
MFJ Enterprises
Morcom International
Motorola Land Mobile Products Sector
Neutec
Primus Electronics 90
R/M Wholesale Communications

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Radio Wholesale Marketing
RF Concepts A Div. of Kantronics
Schaefer Radio
Secom Systems
Speco Components
Spectrum Communications
Syntec Communications Systems
Tactical Electronics
Talley Electronics
Telemobile
Tessco
TPL Communications
Transworld

TRONTECH

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Webster Communications
Wi-Comm Electronics
Wisco International
C. W. Wolfe Communications

Towertop

Antenna Farm
Broadcast Communications
Cartwright Communications 19
Communication Engineers
Communications Associates 99
Crawford Associates
Jack Daniel Company
Decibel Products 45
Eastcom Industries
Electronic Products
Janel Labs
Lightning Prevention Systems
Lunar Industries
Primus Electronics 90
Santa Fe Distributing 105
Secom Systems
Talley Electronics
Tessco
TPL Communications
Trontech
Wacom Products 103
Webster Communications

ANTENNA SITE EQUIPMENT

Including Cavity Filters, Circulators, Hybrid Couplers, Isolators, Preselectors, Receiver Multicouplers

Advanced Receiver Research
Alpha Industries
Andrew
Antenna Farm
Antenna Specialists 111
Austin Antenna
Bird Electronic 110
Broadcast Communications
California Radio
Cartwright Communications 19
Celwave 20, 21
Coaxial Dynamics
Comark Distributing
Communication Engineers

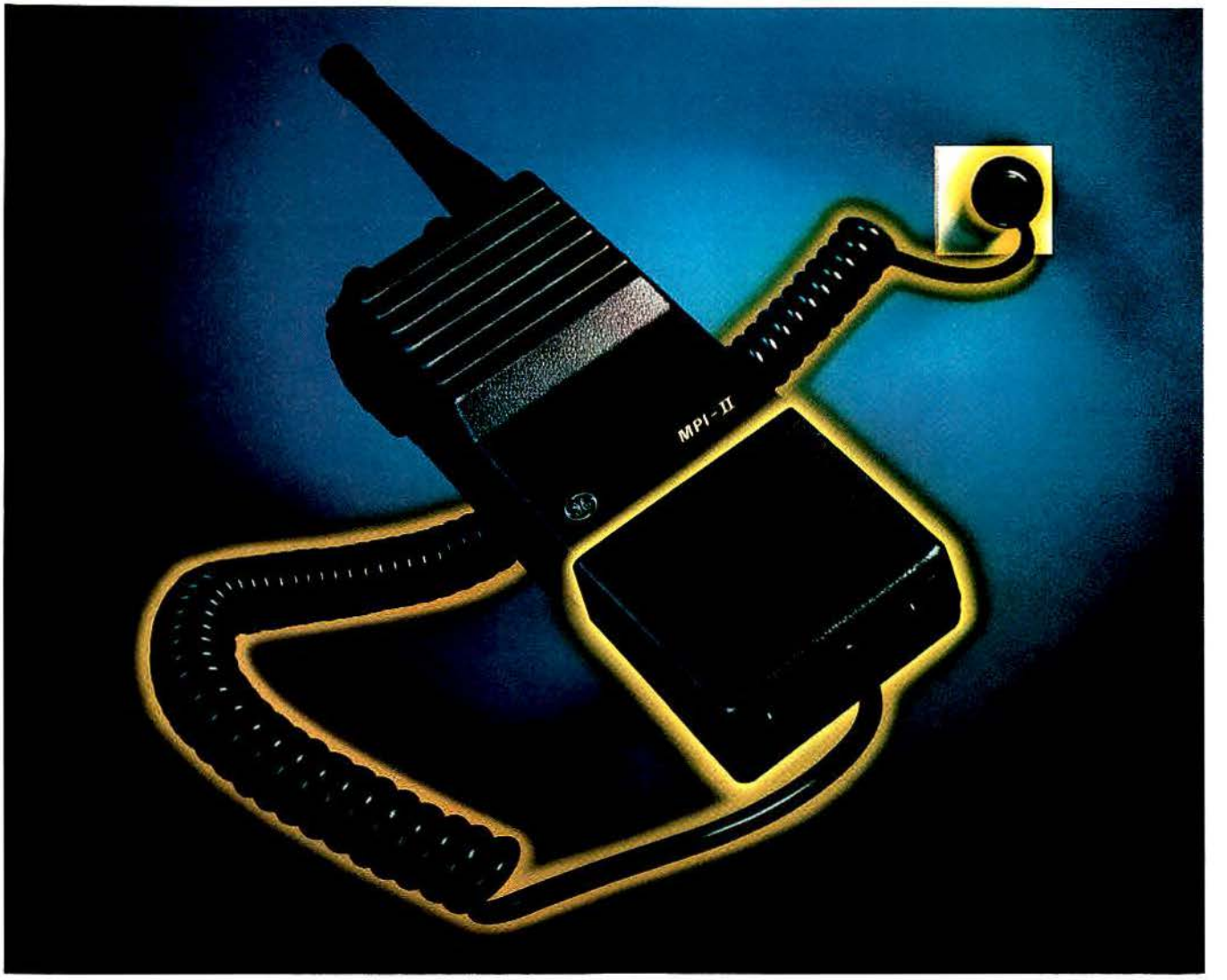
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Crawford Associates
Jack Daniel Company
Danmax Communication
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Douglas Integrated Software
DP Electronics
Eagle Wichita 94
Eastcom Industries
Electronic Products
EMR 103
GLB Electronics 93
Goldspar Communications
GRE America
Hite Electronic Sales
Huber & Suhner
Hutton Communications 66
Industrial Communication Engineers
Jan Industrial Electronics
Janel Labs
Kaval Electronics
LBA Technology
Lightning Prevention Systems
Lindgren RF Enclosures
Manon Engineering
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Master Communications
Mechem Electronics
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Metrocom Services
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Optoelectronics
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Secom Systems
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Sinclair Radio Labs 98
Spectracom
Spectrum Communications
Spi-Ro Manufacturing
Talley Electronics
Telemobile
Telewave
Tessco
Trans-Tech
Trilithic 85
Trontech
TX RX Systems 46
Wacom Products 103
Webster Communications
Wi-Comm Electronics
Wisco International

ANTENNAS

Adams Distributing
Advanced Cellular of Philadelphia
Advanced Fox Antennas
Advanced Videotech
Alltel Supply
Alpha Industries
Andrew
Anritsu Wiltron Sales
Antel Communications

Company Addresses begin on page 48



The Eliminator

The X-Tra Talk® 12-Volt Adapter For 2-Way Radios.

Now you can operate your two-way portable radio from your vehicle for as long as you want. No worries about power drain or related weakening of signal.

With Centurion's new X-Tra Talk battery eliminator (patent pending), you simply plug the adapter into your vehicle's cigarette lighter or any other 12-volt power source.

You get:

- Maximum power output from your radio
- Extended battery life
- Protection against reverse polarity and current surges
- Compatibility with virtually any popular two-way radio

Why put a drain on your radio battery when you can tap into your vehicle's power source? Save your battery for those requirements away from your vehicle.

The X-Tra Talk battery eliminator. Another example of how Centurion leads the way in new product innovation.

Call us toll-free at 800-228-4563 for the name of your nearest distributor.

TOP DUCK CENTURION

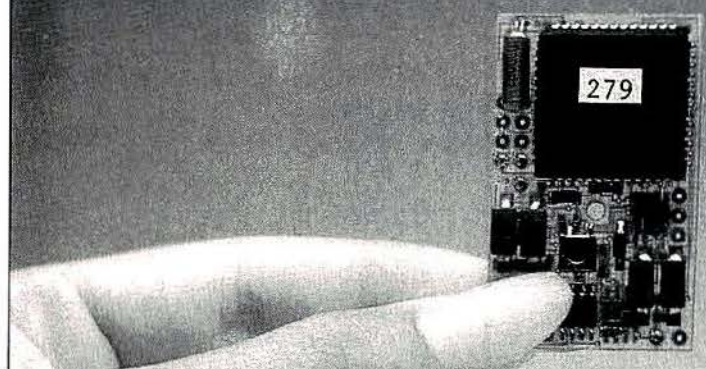
CENTURION INTERNATIONAL, INC.
P.O. Box 82846
Lincoln, Nebraska 68501 • U.S.A.

Circle (25) on Fast Fact Card

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Antenex	Eastcom Industries	Mechem Electronics	Tactical Electronics
Antenna Farm	Electronic Products	Meridian Communications	Talley Electronics
Antenna Specialists ..... IFC	EMR 103	Metrocom Services	Telemobile
Antenna World	Encom Radio Services	MFJ Enterprises	Telewave
Antennas America	ExCellular Communications	Microfleet 82	Telex Communications
Austin Antenna	Fanon Courier	Mobile Installers Products	Tesseo
Auto-Comm Engineering	FWT	Mobile Mark 56	Transworld
Battery Products	Gabriel Electronics	Modublox & Company	Union Electronic Distributors
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Canadian Marconi	Hite Electronic Sales	Neutee	W&W Associates 102
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Cellnet Communications	Hustler 88, 89	Omni-Gain Land Mobile Antennas	Webster Communications
Cellular Solutions	Hutton Communications 66	ORA Electronics	Wholesale Cellular USA
Cellular Wholesalers	Jan Industrial Electronics	Paragon Engineering	Wisco International
Celwave 20, 21	JB Communications	The Portable Depot	
Centurion International 15	Kachina Communications	Primus Electronics 90	**ATTENUATORS AND DUMMY LOADS**
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Childs Antennas	Kenwood USA 59	Pulstar Distributing	AIE
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Comark Distributing	Larsen Antennas	Radio Wholesale Marketing	Antenna Farm
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Comtelco Industries 107	Manon Engineering	Santa Fe Distributing 105	Coaxial Dynamics
Crawford Associates	Marketronics	Scala Electronic	Comark Distributing
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D&L Communications 96		Sharp Communication	Crawford Associates
D&R Associates	MAXRAD State of the Art Antennas	Smith Communications Service	Jack Daniel Company
Danmax Communication	Maxrad 27	Sonar Radio	Decibel Products 45
DAPA Communications		Spi-Ro Manufacturing	Eastcom Industries
db Mobile		Stealth-Cellular IC	EMR 103
Decibel Products 45		STI-CO Industries 64	Hite Electronic Sales
Delcom Radio		Swager Communications	Huber & Suhner
Dowit Service		Syntec Communications Systems	Hutton Communications 66
DP Electronics			Jan Industrial Electronics

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No more fun and games.



Digital ANI

Introducing CSC's ID-33 Encoder for Automatic Number Identification— This state-of-the-art, subminiature ANI board will stop the horseplay and end the stuck mikes. It includes a time-out timer and emergency/status messages as well as ANI; transmits the ID in a mere 100 milliseconds. Fleet prices from $69 to $121. Call for brochure.

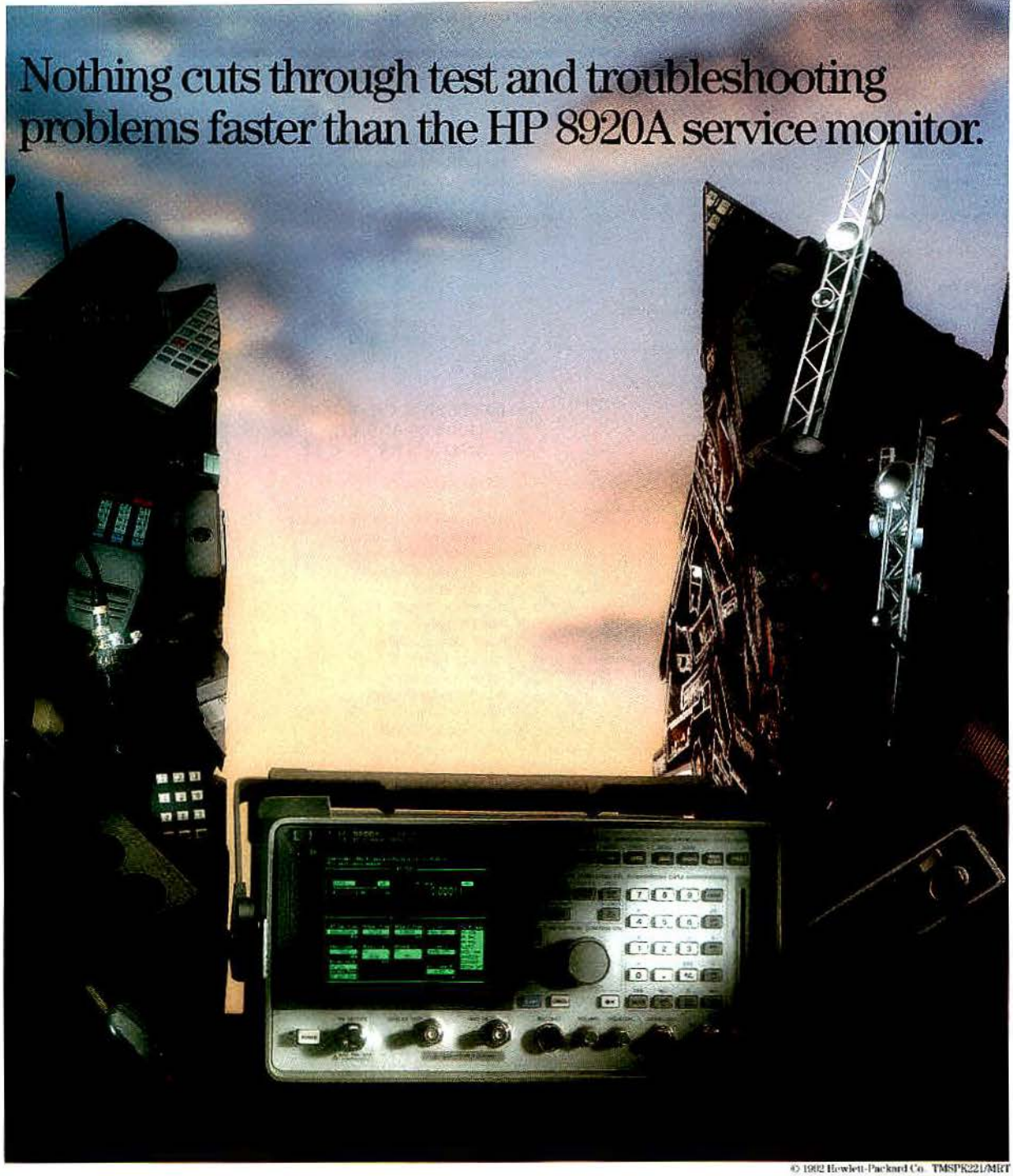
CSC | CONTROL SIGNAL CORPORATION

1985 S. Depew St. #7 Denver, CO 80227 (303) 989-8000

CALL TOLL FREE 1-800-521-2203

Circle (13) on Fast Fact Card

Nothing cuts through test and troubleshooting problems faster than the HP 8920A service monitor.



© 1992 Hewlett-Packard Co. TMSPK221/MRT

From benchtop to mountain top, the HP 8920A provides you with fast, easy and repeatable results.

To keep a communications system running you have to get through test and troubleshooting fast. The HP 8920A gives you the capability to keep problems from mounting up.

It has a built-in spectrum analyzer and tracking generator with markers for quickly finding signals. And 1 dB, 2 dB, and 10 dB amplitude resolution for tuning duplexers and filters.

Built-in encode/decode capabilities like POCSAG, GOLAY, AMPS, NAMPS, TACS, NTACS, and NMT put paging and cellular tests right at your fingertips. You also get E.F. Johnson and E.G.E. trunking for the most signaling available in a service monitor. Along with save/recall, auto-tuning, and auto-print functions that make it easy to get fast, accurate results.

Add to all this, easy-to-use software with repeatable, documented testing for spotting problems quickly in mobile, trunked and cellular radios, and AMPS base stations. And you can see why the HP 8920A helps you solve problems faster.

So if you want to cut through test and troubleshooting, call **1-800-452-4844.** Ask for **Ext. 3204** and we'll send you a video and a brochure that explain how the HP 8920A service monitor gives you the edge you need.

New capabilities of the HP 8920A
CLEARCHANNEL LTR® and EDACS®* trunking
1, 2, and 10 dB resolution on spectrum analyzer
Automatic cellular base station test software
NAMPS and NTACS cellular phone testing

There is a better way

HEWLETT PACKARD

* Available September, 1992
CLEARCHANNEL LTR is a registered trademark of E.F. Johnson Company. EDACS is a registered trademark of Ericsson G.E. Mobile Communications, Incorporated.

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JFW Industries
Manon Engineering
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Meridian Communications
MFJ Enterprises
Motorola Land Mobile Products Sector
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Santa Fe Distributing 105
Sharp Communication
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Telewave
Tessco
Trilithic 85
Wavetek Communications Div. 63
Webster Communications
Wisco International

AUTOMATIC NUMBER IDENTIFICATION

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Cimarron Technologies 25
CML Technologies
Coded Communications 9
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Connect Systems 13
Control Signal 16
Curtis Electro Devices 110
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Pulstar Distributing
Pyramid Communications
Rayfield Communications
Secom Systems
Selectone 3
Sigtone
Solid-State Communications
Syntec Communications Systems
Talley Electronics
Tekno Industries
Telemobile
Tessco
TLP Technologies
Transcrypt International 5
Wisco International

AUTOMATIC VEHICLE LOCATION (AVL)

Adams Distributing

AUTO·TRAC

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Communications & Signals
Dataradio

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Magellan Systems Corp.
Magnavox/Nav-Com
Meridian Communications
METS
Midian Electronics 29
Mitsubishi International
Motorola Land Mobile Products Sector
Navigation Data Systems
Repco
Zireo

BATTERIES, CHARGERS, TESTERS AND CHARGER ANALYZERS

Adams Distributing
Adcour
Advanced Cellular of Philadelphia
Advanced Fox Antennas
Advanced Videotech
AdvanceTec Industries
Air Comm
Alexander Batteries 60
Alltel Supply
Antel Communications
Antenna Farm
Aspine Electronics
Atlantic Solar Products
Battery Products
Bendix/King Mobile Communications Div. 41
Bomar 38
C&S Sales
Cadex Electronics

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Cellnet Communications
Cellular Enterprises
Cellular Solutions
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Cesco
Comark Distributing
Communication Engineers
Communications & Signals
Communications Associates 99
Copeland Engineering
CSC Power Systems
Cushcraft/Signals 37, 92
D&R Associates
Danmax Communication
Delcom Radio
Discovery Distributing
Dowit Service
Duracell
Dynatek Communication Distributors
Eastcom Industries
Electronic Products
Elenco Electronics
Encom Radio Services
ETrunk Systems
ExCellular Communications
Fanon Courier
General Communications 81
Goldspar Communications
Heliotrope General
Hite Electronic Sales

hme
HM ELECTRONICS, INC.

HM Electronics Battery Systems Div.
HMC-Hub Material Company
Hutton Communications 66
JaBro Batteries 105
Jan Industrial Electronics

DYNASTY BATTERIES

Johnson Controls
Kenwood USA 59
Kintek Custom Products
Land Mobile Services West
Lett Electronics
Manon Engineering
Marketronics
MCM Electronics
Meridian Communications
Metrocom Services
Morcom International
Motorola Cellular Subscriber Group
Motorola Land Mobile Products Sector
Mouser Electronics

Multiplier

Multiplier Industries
National Custom Enterprises
National Radio
Newmar 104
Norand
ORA Electronics
Panasonic Communications Systems
Periphex
Photocomm Industrial Div. 54
PMC Associates
Power Conversion Products
Power-Sonic

Get Control.



Remote Control, of up to 16 Channels.
Radius M200 or Maxtrac 300 Series Radios.

The CPI model MCR10 remote and MCR10P interface panel will allow you to remote control Radius or Maxtrac radios, up to sixteen channels, over any two wire voice grade circuit.

The MCR10 remote control system provides LED displays for remote channel indication, channel up and down buttons, PTT indicator, on-hook PTT capability, monitor button and indicator, intercom capability between parallel remotes and the radio, scan control button and indicator for those radios so equipped and speaker volume control.

Features

- Simple installation - No soldering, cutting or crimping
- Provides remote channel indication
- Does not require B308 option
- Remote transmissions heard over radio speaker
- Radio transmissions monitored on remote speaker
- Uses any two wire voice grade circuit

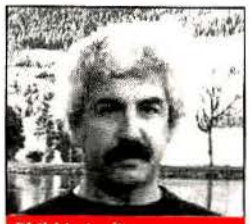
CPI

1186 Commerce Drive • Richardson, TX 75081
(214) 437-5320 • FAX (214) 437-5360 • (800) 869-9128

Circle (15) on Fast Fact Card

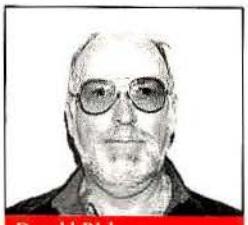
Company Addresses begin on page 48

"And You Can Quote Me"



Phil Licciardi
Radio Communications, Inc.

"I never have a problem with products, or shipping response time."



Donald Rich
Z-Way Mobile Radio

"Your sales people are always very helpful and I get what I need in short order; this saves me money and I can serve my customers better."



Barb Hoover
Troup Electronics

"Over the years we have tried other suppliers but have always stayed with Cartwright. There are never any hassles when we need to return products for any reason."

Cartwright customers can be counted on to speak up when asked for their opinion. Periodically, we ask our customers to tell us how we're doing. The whole truth and nothing but the truth, whether it's "good, bad or ugly". Here's a sampling of their comments. And in each case, they said, "You can quote me".

We Deliver Value!

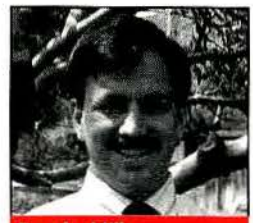
1-3 Day Delivery Nationwide. Call us by 3:00pm E.T. and we'll ship the same day.

Call for our free Pricebook with guaranteed prices for 3 months.



CARTWRIGHT
COMMUNICATIONS COMPANY
800-543-8614

Your ready source for Andrew, A/S, Celwave and Decibel Products.



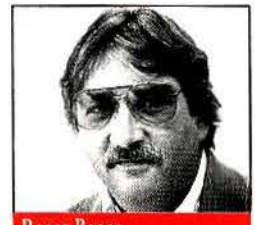
Douglas Miller
Mid State Electronics

"Excellent inventory on everything we've needed and you ship out very quick. Thank you for the good service, keep it up."



Andrew Samo
Communications Unlimited

"Your sales people are very helpful in finding even small items that can't be found elsewhere."



Roger Boggs
Krug International

"All your folks have been really helpful. Thanks for being there, and thanks too for having a 800 number."

Circle (16) on Fast Fact Card

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Powerline
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Santa Fe Distributing 105
Secom Systems
Tekk
Tessco
Wholesale Cellular USA

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Advance Label & Tag
Advanced Cellular of Philadelphia
Advanced Fox Antennas
AdvanceTec Industries
Anchor Graphics

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Antel Communications
Antenex
The Antenna Company
Antenna Farm
Audiovox
Auto-Comm Engineering
Battery Products
C&S Sales
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Hite Electronic Sales
Hutton Communications 66
Jan Industrial Electronics
JB Communications
Kerygma Technologies
Kintek Custom Products

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Our new broadband panel of experts.

They're experts at versatility. Experts at reducing interference. They cover such a wide range, it takes fewer of them to accomplish just as much.

Perfect for any application: SMR, Cellular, Paging, even PCN, Celwave's new broadband line of panel antennas are available in 60°, 80°, 90°, 105° and 120° sector versions. Their profiles are slim, they're aesthetically pleasing, strip line fed, have no soldered joints and are made of irridited aluminum. Radiating elements and feed point are protected from the weather by an environment-proof, ABS Radome.

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CELWAVE RFS
DIVISION OF RADIO FREQUENCY SYSTEMS
Celwave, Route 79, Marlboro, NJ 07746
(908) 462-1880 (800) 321-4700

Circle (17) on Fast Fact Card

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Lucas Ledex
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Nokia Mobile Phones
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Signature International
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Unitech Industries
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Wholesale Cellular USA

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Advanced Fox Antennas
Allgon Mobile
Alltel Supply
Antel Communications
Antenex
The Antenna Company
Antenna Farm
Antenna Specialists ..... IFC
Audiovox
Austin Antenna
Auto-Comm Engineering
Cellnet Communications
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Cellular Solutions
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D&R Associates
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Eastcom Industries
Electronic Products
Encom Radio Services
ExCellular Communications
Gabriel Electronics
Hirschmann of America
Hite Electronic Sales
Huber & Suhner
Hutton Communications 66
Jan Industrial Electronics
JB Communications
Lett Electronics
Manon Engineering
Marketronics



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Pulstar Distributing
Radiation Systems
Mark Antennas Div. 78
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Scala Electronic

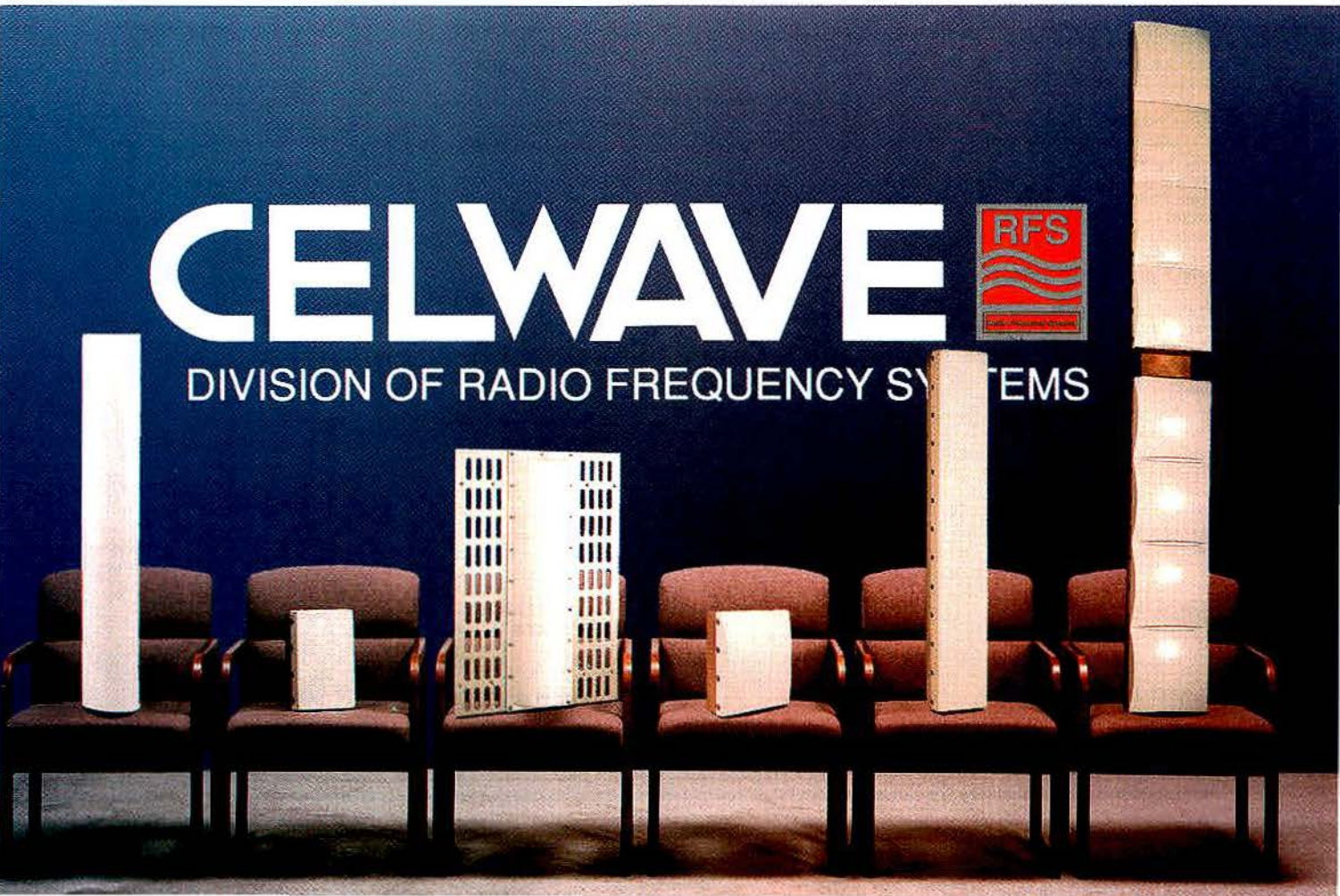
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Stealth-Cellular IC
STI-CO Industries 64
Tag Technologies
Talley Electronics
Tessco
Union Electronic Distributors
VCP International 54, 86
VDO-PAK
Voice of the Road
Les Wallen USA
Webster Communications
Wholesale Cellular USA
Wisco International

CELLULAR PHONES

Advanced Cellular of Philadelphia
Antel Communications
Audiovox
Auto-Comm Engineering
Braley Communication Systems
Cellnet Communications
Cellular Enterprises
Cellular Wholesalers
Communications Associates 99
Continental Leavitt Communications
CP Communications
D&R Associates
Drive Phone
Dynatek Communication Distributors
Encom Radio Services
ExCellular Communications
General Communications Services
Jan Industrial Electronics
Meridian Communications

Company Addresses begin on page 48



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Metrocom Services
Mitsubishi Electronics America
Mitsubishi International
Mobile Installers Products
Motorola Cellular Subscriber Group
Mountain Communications
NEC America Mobile Radio Div.
Nokia Mobile Phones
OKI telecom
Panasonic Communications Systems
Photocomm Industrial Div. 54
Primus Electronics 90
Pulstar Distributing
R/M Wholesale Communications
Racom Products
Santa Fe Distributing 105
Tag Technologies
Technophone
Telular
Uniden Corporation of America 65
VCP International 54, 86
Voice of the Road
VSI Telecommunications
Wholesale Cellular USA

CHANNEL ELEMENTS AND TCXOS

Ace Communications
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Bomar 38
Branco 92
Cal Crystal Lab
California Radio
Channel Element Headquarters
Hite Electronic Sales
Hy-Q International (USA)



International Crystal Manufacturing Co.

ICM Communications 93
Jan Industrial Electronics
Metrocom Services
Motorola Land Mobile Products Sector
NKX
Optoelectronics
PCI-Pekaar Communication
PMC Associates
Savoy Electronics
Sentry Manufacturing
Spectracom
Temex Electronics
Wisco International
C. W. Wolfe Communications

CLOSED-CIRCUIT TELEVISION EQUIPMENT

Alltel Supply
Auto-Comm Engineering
California Radio
Communications & Signals
Danmax Communication
Electronic Products
Jan Industrial Electronics
PanaVise Products 70
Secom Systems
SMC Electro-Mount
SWS Security

COAXIAL CABLE

Cable, Connectors, Switches, Supports and Accessories

Adams Distributing
ADC Telecommunications
Alltel Supply

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Amphenol RF/Microwave
Andrew



Antenna Farm
Antenna Specialists ..... IFC
Auto-Comm Engineering
AVA Electronics
Avcom of Virginia 84
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Cesco
Childs Antennas
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Communications Associates 99
Communications West
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Cushcraft/Signals 37, 92
CZ Labs
Danmax Communication
db Mobile
Decibel Products 45
DP Electronics
DW Electrochemicals
Eastcom Industries
Electronic Products
FWT
Gabriel Electronics
Goldspar Communications
Hite Electronic Sales
Huber & Suhner
Hutton Communications 66
Jan Industrial Electronics
JB Communications
L&R Communications
Manon Engineering
Marketronics
Meridian Communications
MFJ Enterprises
Monroe Electronics
Motorola Land Mobile Products Sector
Mouser Electronics
Nemal Electronics International
ORA Electronics
Primus Electronics 90
Pulstar Distributing
Relm Communications 71
RF Industries
Santa Fe Distributing 105
Scala Electronic
Spi-Ro Manufacturing
Swager Communications
Talley Electronics
Telemobile
Tesseo
Trilithic 85
Union Electronic Distributors
Webster Communications
Wisco International

COMPUTER-AIDED DISPATCH

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AT&T
Auto-Trac
Catcom Systems
Cimarron Technologies 25
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Communications & Signals
Control Signal 16
Dinet
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Eastcom Industries
Ex Machina
Fitzgerald Telecom
Integrated Computer Concepts
Interconnect Specialists
Itron
Magnavox/Nav-Com
MaSys
Micro-Quick Systems
Midian Electronics 29
Modems Plus
MX-COM 7
Navigation Data Systems
Omnicom
PacketCluster Systems 110
Pyramid Communications
Rayfield Communications
Sigtone
Telecommunications Engineering Associates
Transcrypt International 5
U S West Public Safety Group
Wisco International
Zebryk Engineering
Zirco

CONSOLES

AAT Communications
Adams Distributing
Atlas/Soundolier
Auto-Comm Engineering
Automation & Electronics Engineering
AVTEC
Catcom Systems
CML Technologies
Communications & Signals
ElectroCom Communication Systems, L.P.
Ericsson GE Mobile Communications
General Communications 81
GRE America
Jan Industrial Electronics
E. F. Johnson Company
Kustom Signals
Manon Engineering
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S&S Fabrication Poop Deck Radio Mount Div.
Schaefer Radio
Secom Systems
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Sound Designers Studio
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CRYSTALS

Ace Communications

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Adams Distributing
Advanced Videotech
Bomar 38
Cal Crystal Lab
Crystronics
Electro Dynamics Crystal
Hite Electronic Sales
Hy-Q International (USA)



International Crystal Manufacturing Co.

ICM Communications 93
Jan Crystals
Jan Industrial Electronics
K-W Mfg.
Kenwood USA 59
M-Tron Industries
Marden Electronics
Morcom International
Motorola Land Mobile Products Sector
NKX
PMC Associates
Savoy Electronics
Sentry Manufacturing
Telemobile
Temex Electronics
Wisco International

DATA TRANSMISSION EQUIPMENT

Ace Communications
Adams Distributing
Aisin U.S.A.
Alcom Electronics
Alltel Supply
Appropriate Data Communications
Auto-Comm Engineering
Auto-Trac
Braley Communication Systems
Broadcast Communications
Cellabs
Cellular Solutions
CML Technologies
Coded Communications 9
Coherent Communications
Communications & Signals
Compuquest
Cromack Industries
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Real Time Strategies
RF Data
RF Industries
RTI Communications
Synetcom Digital
Syntec Communications Systems

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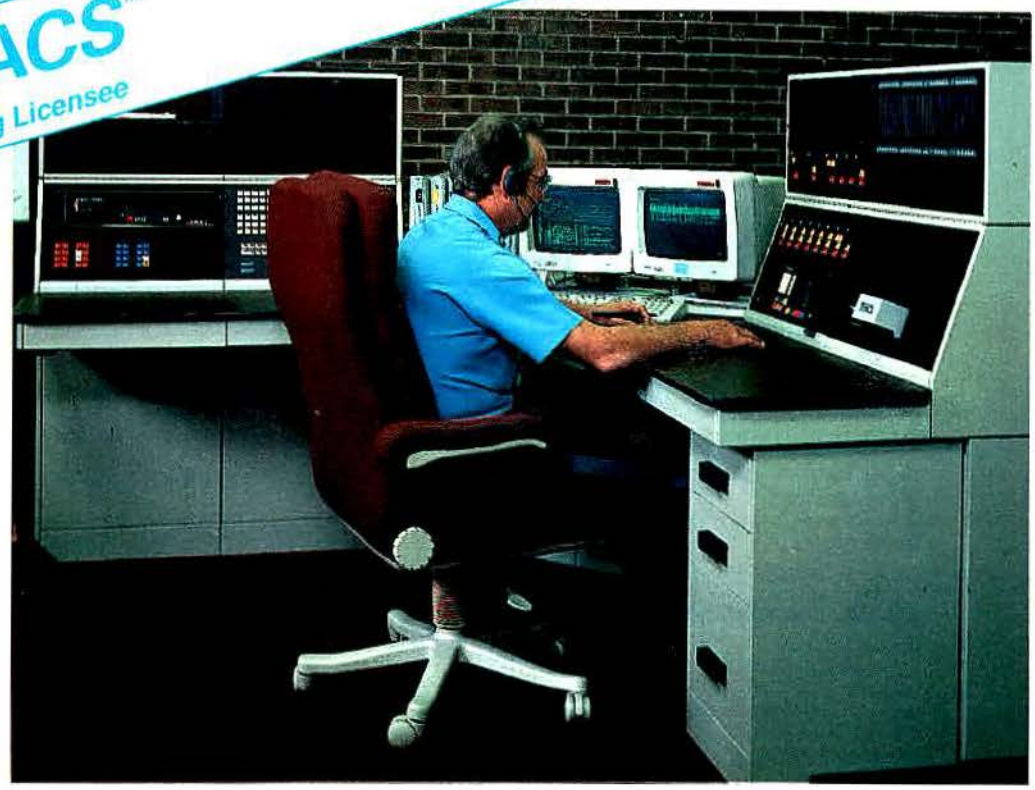
ANNOUNCING

ERICSSON

EDACS™ Trunking Licensee

Ericsson GE Mobile Communications Inc
Mountain View Road • Lynchburg, Virginia 24502

When every second counts...



TDM-150: Our state-of-the-art, 120+ channel console

Count on the reliability and performance of communications consoles from Orbacom

In an emergency, reliable communications are the lifeline for survival. That's why so many communications systems rely on Orbacom's CALIDA and TDM-150 consoles. Their superior performance and solid dependability have been proven in the most demanding applications.

If you need the control flexibility of a big console on a small budget, CALIDA is for you. CALIDA handles 16 channels, includes a multi-format paging and signalling encoder, is completely user programmable, and features a 12/24 hour clock, VU meter, alert tone, crosspatch, service intercom, desk mic with PTT and monitor switches, surge protection, and a wealth of other professional features.

If your service requires a state-of-the-art dispatch console, Orbacom's TDM-150 is the solution. TDM-150 is a custom system, so we'll configure it the way you need it — up to 120 channels or more and 120 positions. TDM-150 uses time-division multiplex (TDM) digital audio processing and complete microprocessor control. Operation is simple and menu-driven. Reliability is ensured through surge protection, self-healing diagnostics, and battery backup. Eight levels of multi-channel radio and telephone patch may be run simultaneously, and an internal paging signalling encoder generates any sequence you'll ever need. Plus the best two-year console warranty in the business.



CALIDA: Big console flexibility for smaller systems



Mini-TDM-150 Desktop Console

Take your pick. CALIDA for professional performance in smaller systems. And TDM-150 for state-of-the-art performance on 120 channels or more. Either way you can count on Orbacom. Our communications consoles are the most reliable you can buy, and have been since 1970.

Call (609) 829-4455 and let Orbacom solve your dispatching problems. Orbacom Systems, Inc., 1704 Taylors Lane, Cinnaminson, NJ 08077; FAX: (609) 829-6980.

ORBACOM SYSTEMS, INC.

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Telecommunications Engineering Associates
Telemobile
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Antenna Farm
Canadian Marconi
Communications & Signals
Doppler Systems



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Secom Systems
Simrad 58
Sunflower Radio Products
SWS Security
Tactical Electronics
Tech Comm
Wisco International

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DUMMY LOADS - SEE ATTENUATORS

FREQUENCY COUNTERS

AIE
Alcom Electronics
Brunelle Instruments
C&S Sales
Canadian Marconi
Communications Associates 99
Contact East
Control Signal 16
Danmax Communication
Elenco Electronics
John Fluke Mfg.
Helper Instruments
HMC-Hub Material Company
Jan Industrial Electronics
Marconi Instruments
Morcom International
Motorola Land Mobile Products Sector
Mouser Electronics
Optoelectronics
Procomm USA
Santa Fe Distributing 105
Talley Electronics
Tessco
Union Electronic Distributors
Wisco International

GENERATORS, TONE AND RF SIGNAL

AIE
Alcom Electronics
C&S Sales
Canadian Marconi
Communications Associates 99
Communications Specialists ..... BC
Cromack Industries
Danmax Communication
Direct Conversion Technique
Eastcom Industries
Electronic Products
Elenco Electronics
John Fluke Mfg.
Helper Instruments
HMC-Hub Material Company
Jan Industrial Electronics
Marconi Instruments
Midian Electronics 29
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Motorola Land Mobile Products Sector
Northern Controls & Communications
Primus Electronics 90
R/M Wholesale Communications
Rohde & Schwarz
Secom Systems
Signalcrafters
Talley Electronics
Tessco
Union Electronic Distributors
Wavetek Communications Div. 63
Webster Communications
Wisco International

HEADSETS

Adams Distributing
Advanced Videotech
Alltel Supply
Auto-Comm Engineering
Call One Headsets
Cellabs
Cellular Solutions
Centurion International 15
Cetacea Sound
David Clark Company 8
Communications & Signals
CP Communications
Danmax Communication
Delcom Radio
Farmark 108
Eastcom Industries
HCS Telecommunications
Jan Industrial Electronics
Mechem Electronics
Motorola Land Mobile Products Sector
National Radio
New Eagle Communications
PMC Associates
Primus Electronics 90
R-Columbia Products
RadioMate
Santa Fe Distributing 105
Secom Systems
Setcom
Sonic Communications 106
Syntec Communications Systems
Talley Electronics
Television Equipment Associates
Telex Communications
Tessco
Transworld
VSI Telecommunications
Webster Communications
Wisco International

INSURANCE

Communications Insurance Consultants, CMT Leasing
Royal Insurance
The Signal

INTERCOMS

Atkinson Dynamics
Atlas/Soundolier
Auto-Comm Engineering
Cetacea Sound
David Clark Company 8
CP Communications
Danmax Communication
Fanon Courier
Jan Industrial Electronics
Nady Systems
R-Columbia Products
Raven Electronics 108
Setcom
Sonic Communications 106
Telemobile
Television Equipment Associates
Telex Communications
VSI Telecommunications

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Including Message Accounting

Adams Distributing
Advanced Computer Controls
AmeriCom
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CES
Connect Systems 13
Danmax Communication
Data Signal 68
Eastcom Industries
IDA 97
Integrated Computer Concepts
Interconnect Specialists
Manon Engineering
Master Communications
Neutec
Peacocks Radio & Wilds Computer Services
Racom Products
Real Time Strategies
S-Com Industries
SMC Wireless
Tekno Industries
Telepoint 95
Trident Micro Systems 67
Wisco International
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INVERTERS AND DC-DC CONVERTERS

Adams Distributing
Alltel Supply
Antenna Farm
Astron 43
Auto-Comm Engineering
Cartwright Communications 19
Cellular Solutions
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Comark Distributing
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Communications Associates 99
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Encom Radio Services
ExCellular Communications
Exeltech
Heliotrope General
Hite Electronic Sales
Hutton Communications 66
Jan Industrial Electronics
Lapp Company
Marketronics
Meridian Communications
Motorola Land Mobile Products Sector
Newmar 104
Northern Technologies
Photocomm Industrial Div. 54
Power Conversion Products
Powerline
Primus Electronics 90
Ritz Electronics
Secom Systems
SES 106
Statpower Technologies
Talley Electronics
Tessco
Tripp Lite
Union Electronic Distributors
Vanner
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VDO-PAK
Vital Power Technology
Les Wallen USA
Wilmore Electronics 109
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LIGHTNING AND SURGE PROTECTORS

Adams Distributing
Alltel Supply
Antenna Farm
Auto-Comm Engineering
Best Power Technology
Broadcast Communications
Cartwright Communications 19
Citel America
Communications & Signals
Communications Associates 99
Communications West
Contact East
Cortana
CSC Power Systems
CZ Labs
Danmax Communication
Eastcom Industries
Electronic Products
Encom Radio Services
EWT
Goldspar Communications
Harger Lightning Protection 100
HMC-Hub Material Company
Huber & Suhner
Industrial Communication Engineers
Jan Industrial Electronics
Lightning Eliminators & Consultants
Lightning Master



Lightning Prevention Systems
Manon Engineering
Marketronics
MCG Electronics
Meridian Communications
Motorola Land Mobile Products Sector
Mouser Electronics
Northern Technologies
Oneac
PolyPhaser 109
Primus Electronics 90
Pulstar Distributing
R/M Wholesale Communications
SES 106
Solid-State Communications
Swager Communications
Talley Electronics
Telemobile
Tessco
Tripp Lite
Union Electronic Distributors
Vir James
Les Wallen USA
Webster Communications
Wisco International

Company Addresses begin on page 48

And you thought you could only get "Aliasing" on a C.A.D.

Introducing advanced two-way ANI products from Cimarron Technologies.



C-Mark III ace full-featured two-way dispatch display, with Aliasing.

The advanced family of two-way ANI products from Cimarron Technologies gives you the functionality of expensive computer aided dispatch systems in a compact, economical package.



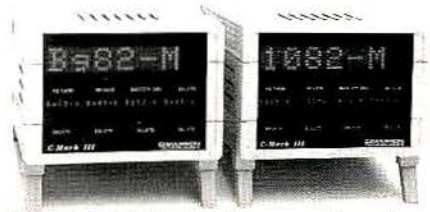
CDT-1 desk-top terminal.

Plus, our new subminiature CDEU-1 encoder-decoder gives virtually any portable or mobile radio two-way communications capability. It features "TKO" remote radio disable, message acknowledgement, selective call and remote monitoring and control.

And the CPF-1 hand-held programmer allows you to conveniently program more than 34 options right in the field.

In the dispatch center, our C-Mark III series of two-way dispatch displays instantly convert numeric data fields and IDs to alpha numerics. Up until now, you could only get this type of aliasing with expensive C.A.D. units.

To find out more about our economical, two-way ANI system, contact Jack Batchie, National Sales Manager, at Cimarron Technologies. Call toll-free 1-800-487-7184 in the USA and California, or (619) 738-3280.



The C-Mark III Series of two-way dispatch displays give you the functionality of expensive C.A.D. systems.



CDEU-1 encoder-decoder features two-way handshaking protocol that guarantees message reliability.

CIMARRON TECHNOLOGIES

Circle (19) on Fast Fact Card

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LOGGING RECORDERS

AAT Communications
Algo
Alltel Supply
Am/Comm Systems
Atis

Dictaphone
A Pitney Bowes Company

Dictaphone 73
John Fluke Mfg.
Magnasync/Moviola 79
Mechem Electronics
Motorola Land Mobile Products Sector
MX-COM 7
Omnicron Electronics 108
PacketCluster Systems 110
Phoentix
R/M Wholesale Communications
Racom Products
Reproduction Technologies
Simrad 58
TEAC America 91
Tekno Industries
Trident Micro Systems 67
TSR Technologies 35
VLR Communications
Webster Communications
Zetron 51

MESSAGES REPEATERS - SEE LOGGING RECORDERS

MICROPHONES

Including Console, DTMF, Ear, Throat, Mobile and Portable

Adams Distributing
Air Comm
Antenna Farm
Auto-Comm Engineering
Automation & Electronics Engineering
Bendix King Mobile Communications Div. 41
Bramco 92
California Radio
Call One Headsets
Cellnet Communications
Cellular Solutions
CES
David Clark Company 8
Communications & Signals
Communications Associates 99
Commuwell International
Danmax Communication
Data Signal 68
Delcom Radio

DYNATECH TACTICAL COMMUNICATIONS, INC.

Dynatech Tactical Communications (DTC) 101
Eastcom Industries
Encom Radio Services
ETrunk Systems
Fanon Courier
HCS Telecommunications
Hutton Communications 66
ICOM America 53
IDX 97
Interconnect Specialists
Jan Industrial Electronics
Kenwood USA 59
Manon Engineering
Marketronics
Mechem Electronics
Meridian Communications
Metrocom Services
MFJ Enterprises
Midian Electronics 29
Midland Land Mobile Radio 57
Motorola Land Mobile Products Sector
New Eagle Communications
ORA Electronics
Panasonic Communications Systems
PCI-Pekaar Communication
The Portable Depot
Primus Electronics 90
R-Columbia Products
Radio Wholesale Marketing
Richardson Electronics Cetron Communications Div.
RTX
Santa Fe Distributing 105
Schaefer Radio
Secom Systems
Shure Brothers 47
Sigtone
Sonar Radio
Sonic Communications 106
Speco Components
Syntec Communications Systems
Talley Electronics
Tekk
Telemobile
Television Equipment Associates
Telex Communications
Tesseo
Transworld
Union Electronic Distributors
Vansco Electronics
Wholesale Cellular USA
Wisco International
C. W. Wolfe Communications
Zetron 51

MICROWAVE EQUIPMENT

Advanced Tech Com
Alcom Electronics
Alltel Supply
Alpha Industries
Andrew
Anritsu Wiltron Sales
Antenna Farm
Auto-Comm Engineering
Broadcast Communications
Cardion Electronics Communications
Cartwright Communications 19
Communications & Signals
Communications Associates 99
Communications West
J. Doering Communications
DP Electronics
Eagle Wichita 94
FWT
Gabriel Electronics
Goldspar Communications
Harris Farinon Div.
Hite Electronic Sales
Huber & Suhner
Jefa International
JFW Industries
Manon Engineering
Marketronics
Mechem Electronics
Microflect 82
MicroNet Site Management
Microwave Data Systems
Microwave Networks
Moseley
NSI Systems
Peninsula Engineering
Primus Electronics 90
R/M Wholesale Communications
Radiation Systems Mark Antennas Div. 78
Roberts & Company
Schaefer Radio
A.W. Sperry Instruments
Swager Communications
Synetcom Digital
Tactical Electronics
Talley Electronics
Telemobile
Tesseo
Trontech
Western Multiplex
Wisco International

MOBILE DATA SYSTEMS AND MESSAGE SWITCHES

Catcom Systems
Cellabs
Cetacea Sound
CML Technologies
Coded Communications 9

CROMACK™
NETWORK SYSTEMS

Cromack Industries
CyberSym Control Systems
Dataradio
Eastcom Industries
ElectroCom Communication Systems, L.P.
Integrated Computer Concepts
Kensington & Icknield
Kustom Electronics
Logotronix Communications
Millidyne
Modems Plus
Motorola Land Mobile Products Sector
Navigation Data Systems
PacketCluster Systems 110
RAM Mobile Data
Raven Electronics 108
Real Time Strategies
RF Data
Sigtone
Solid-State Communications
Solid-State Electronics
Syntec Communications Systems
Syntonic
Telecommunications Engineering Associates
Telemobile
Tesseo
TTI
U S West Public Safety Group
Wisco International
Zebryk Engineering
Zetron 51

MOBILE DATA TERMINALS

Adams Distributing
Auto-Comm Engineering
Canadian Marconi
Cellular Design
Cetacea Sound
Coded Communications 9
Dinet
Dynatek Communication Distributors
Eastcom Industries
ElectroCom Communication Systems, L.P.
Encom Radio Services
Itron
Jan Industrial Electronics
METS
Millidyne
Mobile Data Communications
Modems Plus
Motorola Land Mobile Products Sector
Navigation Data Systems
Norand
PacketCluster Systems 110
Primus Electronics 90
RaCoTek
Sigtone
Solid-State Electronics
Synetcom Digital
Talley Electronics
TekNow
Telemobile
TorFino Enterprises
Transworld
Wisco International
Zebryk Engineering
Zirco

MOBILE TELEPHONE EQUIPMENT, NON-CELLULAR

Mobile and Portable Telephones

Air Comm
Auto-Comm Engineering
Barnett Electronics
Cellnet Communications
D&L Communications 96
Danmax Communication
Dynatek Communication Distributors
Encom Radio Services
Ericsson GE Mobile Communications
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Metrocom Services

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Paging Products International
Panasonic Communications Systems
The Portable Depot
R/M Wholesale Communications
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Smith Communications Service
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CTI 76
CyberSym Control Systems
Danmax Communication
DW Electrochemicals
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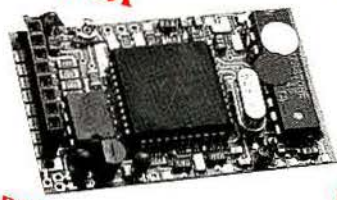
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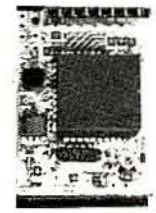


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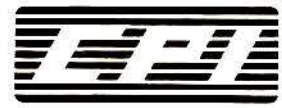
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Sound Designers Studio
Talley Electronics
Telemobile
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RECORDERS - SEE LOGGING RECORDERS

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Kustom Signals
Lucas Ledex
Mechem Electronics
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Secom Systems
Smith Communications Service
Solid-State Communications
Solid-State Electronics
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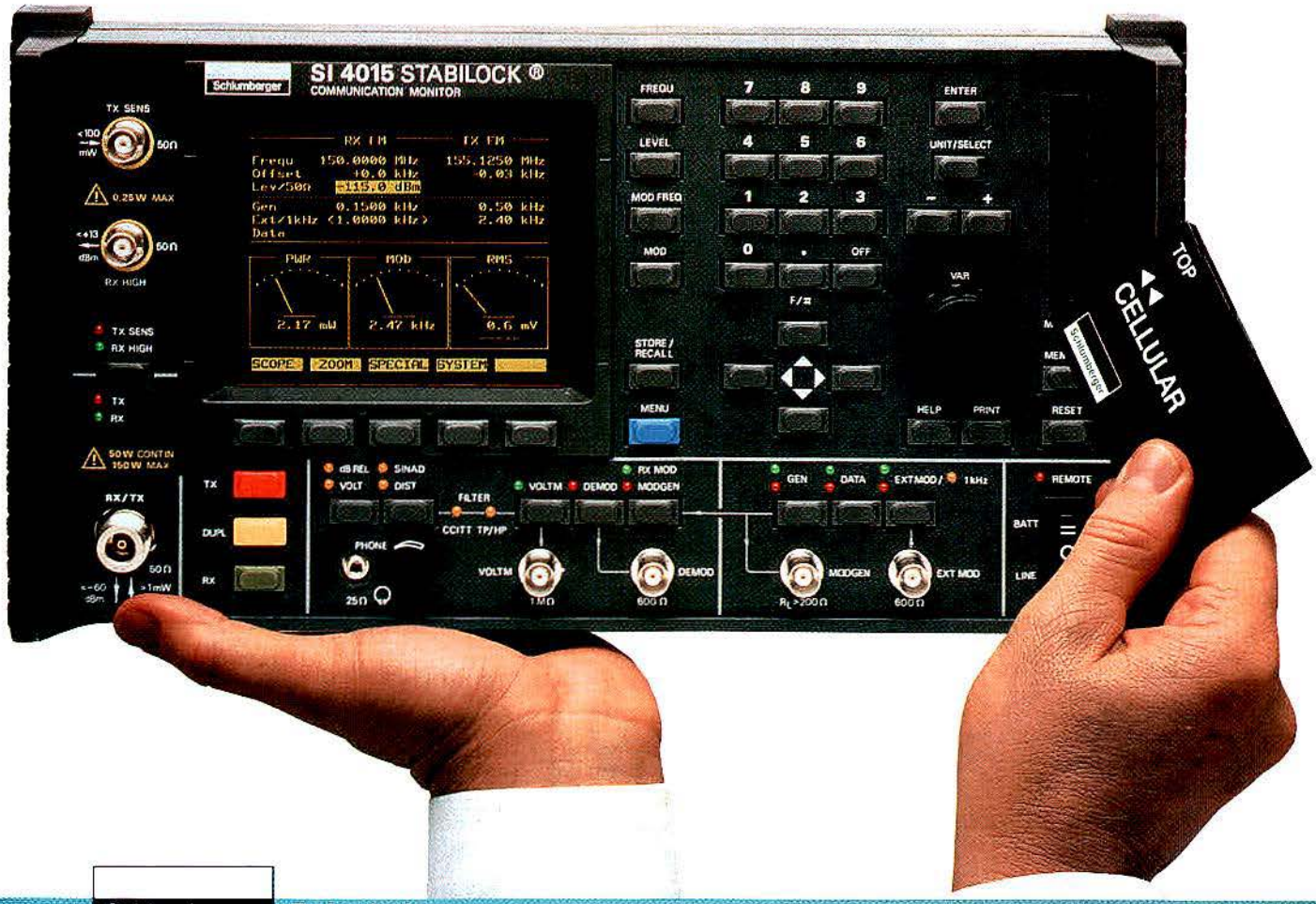
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Preston Communications
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Sunflower Radio Products
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REPEATERS

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Crossband

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Raven Electronics 108
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Secom Systems
Shinwa Communications of America
Spectrum Communications
SWS Security
Tait Electronics 40
Telemobile
Teletec
Transcrypt International 5
Wisco International
C. W. Wolfe Communications

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Communication Engineers
Communications & Signals
D&L Communications 96
D&R Associates
Danmax Communication
Electronic Products
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Preston Communications
Procomm USA
R/M Wholesale Communications
Radio Wholesale Marketing
Ranger Communications
Ritron
Schaefer Radio
Secom Systems
Standard Communications 77
Telemobile
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Wisco International

Portable

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Communications & Signals
CP Communications
D&L Communications 96
D&R Associates
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Telemobile
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RF LINKS

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Canadian Marconi
Cardion Electronics Communications



Carlson Communications
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Communications & Signals
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SELECTIVE CALLING - SEE SIGNALING

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SEMICONDUCTOR TESTERS

Anritsu Wiltron Sales
C&S Sales
Cetacea Sound
HMC-Hub Material Company
Jan Industrial Electronics
Santa Fe Distributing 105
Union Electronic Distributors

SERVICE MANUALS

Advanced Videotech
B&K Precision
Cellular Wholesalers
Curtis Electro Devices 110
Jan Industrial Electronics
Midland Land Mobile Radio 57
Motorola Land Mobile Products Sector
Official Scanner Guide
Quantum Publishing
Sonar Radio
Telemobile
Tessco
Trident Micro Systems 67
C. W. Wolfe Communications

SERVICE MONITORS AND MODULATION DEVIATION METERS

AIE
Alcom Electronics
Antenna Farm
Barnett Electronics
Canadian Marconi
Com-Ser Labs

COMMUNICATION INSTRUMENTS

Communication Instruments
Communications Associates 99
Cushman
Electronic Products
Helper Instruments
Hewlett-Packard 16A, 16B, 17
H-R Systems 32A, 32B, 33
Jan Industrial Electronics
Manon Engineering
Marconi Instruments
Marketronics
Motorola Land Mobile Products Sector
PMC Associates
Primus Electronics 90
Rohde & Schwarz
Secom Systems
Talley Electronics
Tekno Industries
Tessco
Triton Electronics
TSR Technologies 35
Wavetek Communications Div. 63
Webster Communications
Wisco International

SHELTERS

Adelphon
Alltel Supply
Aluma Tower
Andrew
Auto-Comm Engineering
Bally Engineered Structures
Broadcast Buildings
Broadcast Communications
Central Tower
Communication Engineers
Communications West
Contor Terminals
DAPA Communications
DuPont Building
Easi-Set Industries
Electronic Products
Elite Building
Enviro-Buildings



Fibrebond

FWT

FWT
Goldspar Communications
Hartford Concrete Products
Hite Electronic Sales
Kontek Industry
Kullman Industries
Manon Engineering
Mod-Tek
Motorola Land Mobile Products Sector
Professional Systems
Rohn
Sabre Communications
Telemobile
Transworld
Utility Structures
VFP

SHIELDED ENCLOSURES AND ACCESSORIES

Broadcast Buildings
Communications West
DW Electrochemicals
FWT
Hartford Concrete Products
Industrial Communication Engineers
LBA Technology
Lindgren RF Enclosures
Motorola Land Mobile Products Sector
Pacific West Electronics
Professional Systems
Telemobile

SIGNALING AND CONTROL EQUIPMENT, ANALOG

CTCSS, DTMF, Two-Tone and Five-Tone Encoders-Decoders

Adams Distributing
Advanced Videotech
Alcom Electronics
Alltel Supply
Antenna Farm
Auto-Comm Engineering
Automation & Electronics Engineering
Berry Controls
Beamco 92
Cartwright Communications 19
Catcom Systems
CES
Cimarron Technologies 25
Comark Distributing
Communication Engineers
Communications & Signals
Communications Associates 99
Communications Specialists ..... BC
Connect Systems 13
Conway Engineering
CPI Communications 18
Creative Control Products
CTI 76
Jack Daniel Company
Danmax Communication
Dataprobe
Dinet
Eastcom Industries
Electronic Products
ETrunk Systems
Harris Farinon Div.
Hutton Communications 66
Jan Industrial Electronics
Kenwood USA 59
Kyndo West 69
Lucas Ledex
Manon Engineering
Mechem Electronics
Midian Electronics 29
Midland Land Mobile Radio 57
Monroe Electronics
Motorola Land Mobile Products Sector
MX-COM 7
NorComm
Northern Controls & Communications
Paging Products International
Palomar Engineers
Palomar Telecom
Penta
Pipo Communications
Primus Electronics 90
Pulstar Distributing
Pyramid Communications
R/M Wholesale Communications
Raven Electronics 108
Rayfield Communications
Reach Electronics
Secom Systems
Selectone 3
Sigtone
SMC Wireless
Solid-State Communications
Sunflower Radio Products
Synetcom Digital
Syntec Communications Systems
Talley Electronics
Telemobile
Tessco
TLP Technologies
Transcrypt International 5
Trident Micro Systems 67
Vega 1
Webster Communications
Whelen Engineering
Wilcom
Wisco International
Zetron 51

SIGNALING AND CONTROL EQUIPMENT, DIGITAL

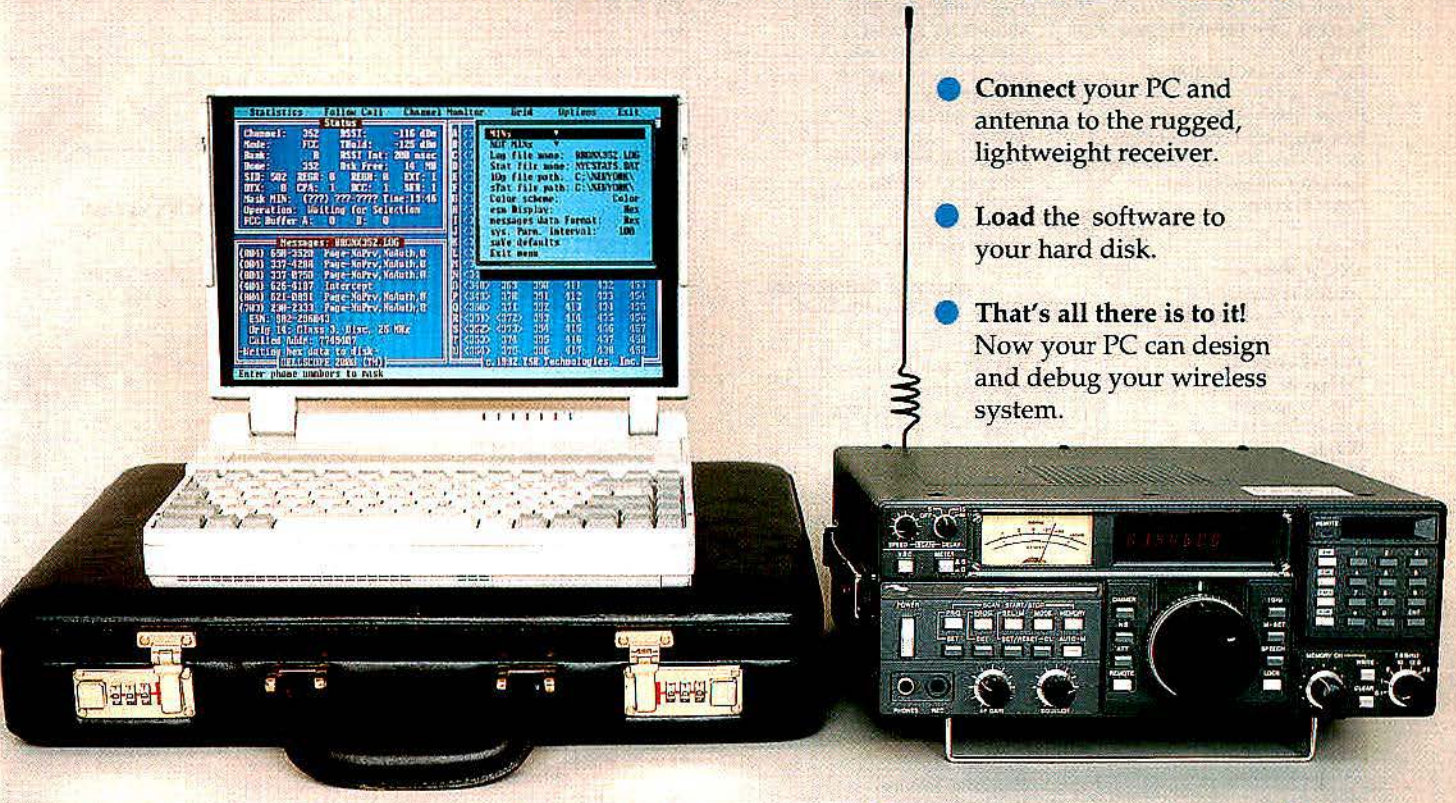
Adams Distributing
ADC Telecommunications
Alltel Supply
Auto-Comm Engineering
Automation & Electronics Engineering
Catcom Systems
Cimarron Technologies 25
Coded Communications 9
Coherent Communications
Comark Distributing
Communications & Signals
Communications Associates 99
Communications Specialists ..... BC
Complex Systems
Jack Daniel Company

Company Addresses begin on page 48

Take It Or Leave It

The Portable Real Time Cellular, Paging and PCN System Monitor That Performs Wherever You Take It.

CELLSCOPE™ 2000 and PAGETRACKER™ 2000



- **Connect** your PC and antenna to the rugged, lightweight receiver.
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Our interface provides an extremely user friendly environment for your entire staff. All you supply is a PC and an antenna. No phones or extra accessories required. Never before has a single piece of test equipment been able to do so much so easily. Look what some of our customers are doing with **CELLSCOPE** and **PAGETRACKER:**

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*Indoor/portable cell site design and installation
*Measure roamer traffic or specific calls
*Spectrum planning and frequency allocation tables
*Marketing assessments and planning
*Traffic studies and subscriber pattern analysis
*PCN/PCS design and installation
*Coverage and interference measurements
*Paging Verification and Remote Control
*Test Services on non-standard control channels
*TDMA and NAMPS equipment tests
*Cellular or Paging remote alarm system
*Cellular phone and base station bench testing
*Microcell installation and sectoring
*Market speculation
*MTSO software development and debugging
*Technical training
*Low Cost RSA utility instrument
*Remote page billing and auditing system
*Law enforcement

TSR TECHNOLOGIES

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Circle (24) on Fast Fact Card

See Adv. Page

Dinet
Eastcom Industries
ETrunk Systems
Goldspar Communications
Harris Farinon Div.
Jan Industrial Electronics
Lucas Ledex
Midian Electronics 29
Midland Land Mobile Radio 57
Modular Communications Systems 50
Motorola Land Mobile Products Sector
NorComm
Paging Products International
Primus Electronics 90
Pulstar Distributing
R/M Wholesale Communications
Raven Electronics 108
Rayfield Communications
Reach Electronics
Selectone 3
Sigtone
SMC Wireless
Solid-State Electronics
Statistical Control Systems
Synetcom Digital
Talley Electronics
Telemobile
TLP Technologies
TSR Technologies 35
Wilcom
Wisco International
C. W. Wolfe Communications
Zebryk Engineering
Zetron 51

SIMULCAST SYSTEMS

Complex Systems
Glenayre Electronics
Goldspar Communications
Motorola Land Mobile Products Sector
Paging Products International
Spectracom
Wisco International
Zetron 51

SINAD METERS

Alcom Electronics
Antenna Farm
Com-Ser Labs
Communication Instruments
Communications Associates 99
Helper Instruments
Jan Industrial Electronics
Manon Engineering
Sunflower Radio Products
Talley Electronics
Tessco
Wavetek Communications Div. 63
Webster Communications
Wisco International

SOFTWARE

Business

ATA Services
Burke Communications Systems
Clever Software
Communications Software
Computer Resources
CSC Intelicom
CyberSym Control Systems
Direct Communications International
Enid 2-Way Communications
Ex Machina
Finestra
Fitzgerald Telecom

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The Genesis Group
Gibson Research
IDA 97
In-Touch Management Systems

LYNN-ARTHUR
OPERATIONS SUPPORT SYSTEMS

Lynn-Arthur Associates
Micro-Quick Systems
Packet Cluster Systems 110
Pyramid Communications
RIX Softworks
Slattery Software
SoftStuff
Statistical Control Systems
Subscriber Computing
TekNow
TLP Technologies
Vansco Electronics

Engineering, Technical and Equipment-Related

Ace Communications
Applied Spectrum Research
ATA Services
Auto-Comm Engineering
Bytek
CNet
Comark Distributing
Communications Data Service
CyberSym Control Systems
Dinet
Direct Communications International
Douglas Integrated Software
EDX Engineering
Enid 2-Way Communications

Ex Machina, Inc.

Ex Machina
Fitzgerald Telecom
Harris Farinon Div.
IDA 97
In-Touch Management Systems
Integrated Computer Concepts
LCC

LYNN-ARTHUR
OPERATIONS SUPPORT SYSTEMS

Lynn-Arthur Associates
Mech-Elec Systems
Micro-Quick Systems
Midland Land Mobile Radio 57
Mouser Electronics
Quantum Publishing
Rayfield Communications
Roberts & Company
Rocky Mountain Communications
RTI Communications
Shaffer Communications Group
Slattery Software
SoftWright Limited Liability
Spartan Radio
Statistical Control Systems
Synetcom Digital
Technical Communications Software
TLP Technologies
Trident Micro Systems 67
TSR Technologies 35
Vansco Electronics

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Vital Power Technology

Topographic

Applied Spectrum Research
Carolina Global Maps
CNet
Communications Data Service
Comsearch
CyberSym Control Systems
EDX Engineering
Goldspar Communications
International Map Service
Kaval Electronics
LCC
Manon Engineering
Rocky Mountain Communications
SoftWright Limited Liability
Technical Communications Software

SOLDERING, DESOLDERING AND SURFACE-MOUNT REPAIR EQUIPMENT

Alcom Electronics
Cellular Wholesalers
Communications Associates 99
Communications Specialists ..... BC
Contact East
Endeco Div. of Leads Metal Products
HMC-Hub Material Company
Jan Industrial Electronics
Manon Engineering
MCM Electronics
Mobile Installers Products
Motorola Land Mobile Products Sector
Mouser Electronics
MM Newman Corporation Antex Div.
Pace
Primus Electronics 90
Santa Fe Distributing 105
Tessco
Ungar
Union Electronic Distributors
Webster Communications
Brian R. White Company

SPEAKERS

Adams Distributing
Advanced Videotech
Air Comm
Antenna Farm
Auto-Comm Engineering
Boston Acoustics
California Radio
Cartwright Communications 19
Comark Distributing
Communications Associates 99
D&R Associates
Eastcom Industries
Electronic Products
Fanon Courier
Jan Industrial Electronics
MCM Electronics
Midland Land Mobile Radio 57
Motorola Land Mobile Products Sector
Mouser Electronics
New Eagle Communications
Primus Electronics 90
Pulstar Distributing
Santa Fe Distributing 105
Secom Systems
Talley Electronics
Tessco
Union Electronic Distributors

STATION IDENTIFIERS

Adams Distributing
Autocode

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Communications Associates 99
Communications Specialists ..... BC
Control Signal 16
Creative Control Products
Data Signal 68
Eastcom Industries
GLB Electronics 93
Jan Industrial Electronics
Midian Electronics 29
Northern Controls & Communications
Primus Electronics 90
Racom Products
S-Com Industries
Securitron 100
Talley Electronics
Telemobile
Tessco
Trident Micro Systems 67
Wisco International

STATUS ALARM SYSTEMS

Adams Distributing
Appropriate Data Communications
Catcom Systems
Cesco
Cimarron Technologies 25
Communications & Signals
Control Signal 16
Crawford Associates
Jack Daniel Company
Data Signal 68
Dataprobe
Decibel Products 45
Eastcom Industries
Goldspar Communications
Harris Farinon Div.
Hite Electronic Sales
Lucas Ledex
Manon Engineering
Motorola Land Mobile Products Sector
PageTek
Parkinson Electronics
Raven Electronics 108
RTI Communications
Secom Systems
Signalcrafters
SMC Wireless
Solid-State Communications
Talley Electronics
Tekno Industries
Telemobile
TLP Technologies
Transcrypt International 5
Trident Micro Systems 67
Vega 1
Wisco International
Zetron 51

SURFACE-MOUNT REPAIR EQUIPMENT - SEE SOLDERING EQUIPMENT

SWR MEASURING DEVICES AND METERS

Alcom Electronics
Anritsu Wiltron Sales
C&S Sales
Communications Associates 99
Decibel Products 45
Direct Conversion Technique
Eagle Wichita 94
Eastcom Industries
Europa Marketing
Hite Electronic Sales
Hutton Communications 66
Jan Industrial Electronics
Manon Engineering
MFJ Enterprises
Motorola Land Mobile Products Sector

Company Addresses begin on page 48

cushcraft/Signals



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Since 1978, Cushcraft/Signals all-brass mount has been the industry standard.

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- **Excellent conductor to ground**
- **Parts will not seize together**
- **Easily removed**
- **Large improved grounding teeth**
- **Soldered ground lug**

UltraLink CABLE

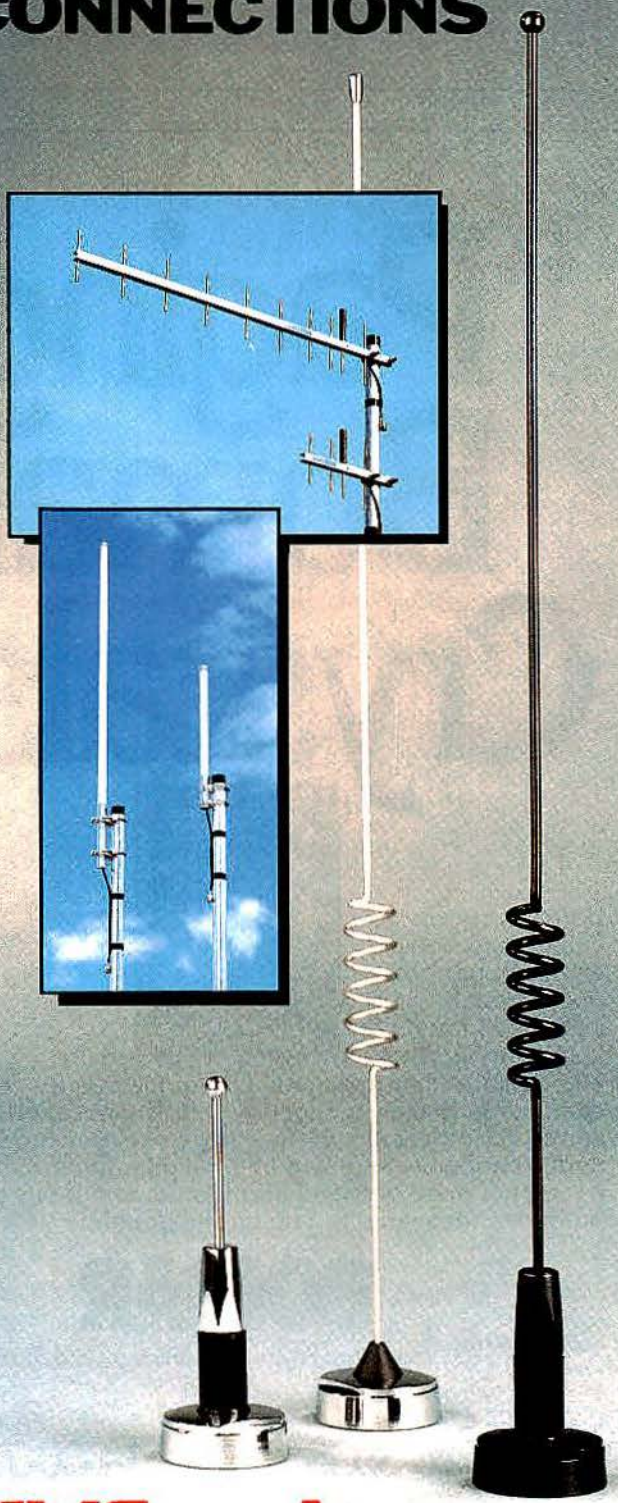
Solves many problems experienced by mobile installers.



- **Low-loss Teflon® dielectric**
- **Withstands high temperature**
- **Fits standard RG58 size connectors**
- **Easily removed dual shields**
- **Used in our base and mobile antennas**



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NSI Systems
Pulstar Distributing
Santa Fe Distributing 105
Secom Systems
Sharp Communication
Signalcrafters
Talley Electronics
Tekno Industries
Tesseo
Trilithic 85
Wavetek Communications Div. 63
Wisco International

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TCXOS - SEE CHANNEL ELEMENTS

TELEPHONE LINE TEST METERS

Alcom Electronics
Alltel Supply
B&K Precision
Brunelle Instruments
Communications Associates 99
Contact East
Conway Engineering

See Adv. Page

Jack Daniel Company
Eastcom Industries
HMC-Hub Material Company
Jan Industrial Electronics
Tesseo
Union Electronic Distributors
Wilcom

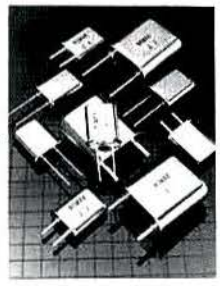
TEST EQUIPMENT

AIE
Air Comm
Alcom Electronics

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Anritsu Wiltron Sales
Auburn Technology
Avcom of Virginia 84
B&K Precision
Boonton Electronics
Broadcast Communications
Brunelle Instruments
Bytek
C&S Sales
Cal-Scope
Canadian Marconi
Cellular Wholesalers
Coaxial Dynamics
Communication Instruments
Communications Associates 99
Compuquest
CompuSource
Contact East
Curtis Electro Devices 110
DCT: Network Analyzers
Direct Conversion Technique
Electronic Products
Elenco Electronics
John Fluke Mfg.
Hark Electronic Systems
Helper Instruments
Hewlett-Packard Signal Analysis Div.
Hewlett-Packard 16A, 16B, 17
HMC-Hub Material Company
IFR Systems 32A, 32B, 33
Itron
Jan Industrial Electronics
Japan Radio
Kenwood USA 59
LCC
Manon Engineering
Marconi Instruments
Marketronics
Motorola Inc. 49
Motorola Land Mobile Products Sector
Optoelectronics
Primus Electronics 90
Ramsey Electronics
Riser-Bond Instruments

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Bomar answers your call for excellence with high performance crystals designed for today's leading tone/voice and digital/numeric pagers. Our rugged pager crystals are engineered to deliver superior performance. Performance that comes from over twenty-five years of experience. And performance backed by a lifetime guarantee. Call now for page after page of useful information about our quality products...delivered to you **on the double!**

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FAX TOLL FREE
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SAGE INSTRUMENTS

Sage Instruments
Santa Fe Distributing 105

Schlumberger

Schlumberger Technologies
Instruments Division 31
Secom Systems
Signalcrafters
Speco Components
Spectracom
A.W. Sperry Instruments
Talley Electronics
Tekno Industries
Tesseo
TGA Systems
TorFino Enterprises
TSR Technologies 35
Union Electronic Distributors
W&W Associates 102
Wavetek Communications Div. 63
Webster Communications
Wilcom

Company Addresses begin on page 48

Put MAXON to work for you!!

RESUMÉ
Maxon America, Inc.

Objective: To continue the design and manufacture of high quality, affordable products for the Land Mobile Radio, Paging and Telemetry/Data markets.

Experience:

1974 - 1981: MAXON MANUFACTURERS ELECTRONICS!
Home stereo equipment, citizen's band radios (we are currently one of the two largest manufacturers in the world!) and cordless telephones.

1982: Maxon introduces its first FM two-way business radio, the CP-0510, housed in a compact, "slim profile" case (we patented the case design). This 5 watt/4 channel VHF portable is the smallest on the market! A full line of accessories were also announced.

1984: Maxon introduces the CP-0520, a UHF version portable. Additional introductions this year — models CS-0510 and CS-0520 (the "CS-Series"), feature a hi-low power switch which selects 1 or 5 watt power output . . . adding a battery saving feature to a Series that still serves the field today!

1986: Maxon enters the telemetry/data market with the DM-0500 Series radio. Three distinct models offer transmit/receive, transmit-only, and receive-only versatility.

1988: Maxon goes synthesized (and mobile)! The SM-4150 is a 40 watt power-house! With 16 programmable channels, and user friendly controls — this mobile will remain a favorite for years to come! Did we mention it took the "Most Innovative New Product" award when introduced to the market?

1991 - 1992: **The SP-2000 Series (models SP-2550 VHF and SP-2850 UHF) synthesized portables offer a 1/5 watt power switch, and 10 programmable channels. This Series performs! The UHF synthesized mobile — model SM-4450 is released. *PAGING?* YES! The ND Series pagers (models ND-1S, ND-4S and ND-9O) bring us into another aggressive market. These UHF, VHF and 900 MHz units continue to enjoy strong sales!**

1993 and beyond: **Trunking repeaters, trunking portables, innovative LMR products, advanced data and paging products!**

References: Business and industrial applications, state and local police departments, fire departments, U.S. Embassies, emergency medical services, security organizations, drug enforcement agencies, etc. — OR, — Call your nearest Authorized Maxon Dealer or MAXON at 1-800-621-7848. (In Missouri, call 816/891-6320).

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A World of Communications



Maxon America, Inc. 10828 NW Air World Drive Kansas City, Missouri 64153 816/891-6320, Fax: 816/891-8815

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See Adv. Page

Wiltron
Wisco International
ZK Celltest

TOWER OBSTRUCTION-MARKING LIGHTS

Auto-Comm Engineering
Broadcast Communications
Central Tower
Cesco
Communications West
Decibel Products 45
EG&G Electro-Optics
Falcon Tower Fabricators
Flash Technology Corporation of America
FWT
Goldspar Communications
Hill Radio Communications
Hite Electronic Sales
Hughey & Phillips
Jan Industrial Electronics
Meridian Communications
Microflect 82
Northern Power Systems
Primus Electronics 90
Rohn
Santa Fe Distributing 105
Shaffer Communications Group
Swager Communications
Tessco
TWR Lighting

TOWERS

Adams Distributing
Adelphon
Alltel Supply
Aluma Tower
Andrew
Antenna Farm
Auto-Comm Engineering
Broadcast Communications
Central Tower
Cesco
Communication Engineers
Communications West
Danmax Communication
DAPA Communications
Electronic Products
Express Tower

FALCON Tower Fabricators

Falcon Tower Fabricators

FWT

FWT
Goldspar Communications
Hill Radio Communications
Hite Electronic Sales
Hutton Communications 66
Jan Industrial Electronics
L&R Communications
LBA Technology
Manon Engineering
Marketronics
Meridian Communications
Microflect 82
Motorola Land Mobile Products Sector
Path Products International
PathCom
PiRod 61
Primus Electronics 90
Rapid Deployment Towers
Roberts & Company
Rohn
Sabre Communications
Santa Fe Distributing 105
Secom Systems
Shaffer & Associates
Shaffer Communications Group
Space Concepts
Swager Communications
Talley Electronics
Telex Communications
Tessco
Tower Structures 80
Trylon Manufacturing
TWR Telecom
Union Electronic Distributors
Utility Tower
Valmont Industries ICPD Communication Products 62
Webster Communications
Western Towers 76

TRANSCEIVERS, ACSSB

Auto-Comm Engineering
Cellnet Communications
Jack Daniel Company
Kenwood USA 59
Manon Engineering
SEA
Wisco International

TRANSCEIVERS, AVIATION (HAND-HELD)

Auto-Comm Engineering
Bendix/King Mobile Communications Div. 41
Communications Specialists 80
Delcom Radio
Jan Industrial Electronics
Motorola Land Mobile Products Sector
Page Com
PMC Associates
Radio Wholesale Marketing
Solid-State Electronics

TRANSCEIVERS, FM CONVENTIONAL, BASE, MOBILE AND PORTABLE

Adams Distributing
Advanced Videotech
AER-Aerotron
Auto-Comm Engineering
Bendix/King Mobile Communications Div. 41
Buy-Comm
California Radio
Canadian Marconi
Cellnet Communications
Communication Engineers
Communications & Signals
Communications Associates 99
Cooks Communications

Company Addresses begin on page 48

WHEN TRAGEDY STRIKES, LACK OF COMMUNICATION IS A REAL DISASTER



Whether it's co-ordinating Search and Rescue teams or dealing with ground relief support groups, a portable communications system is an absolute priority in times of emergency.

The Tait Portable Repeater Station has been designed to be put into action immediately, effectively. Light, robust and 'showerproof', the Portable Repeater Station can handle a network of mobile and handheld radio transmissions in the most remote of terrain.

Wherever life is in danger, the Tait Portable Repeater Station brings the promise of help.

TAIT

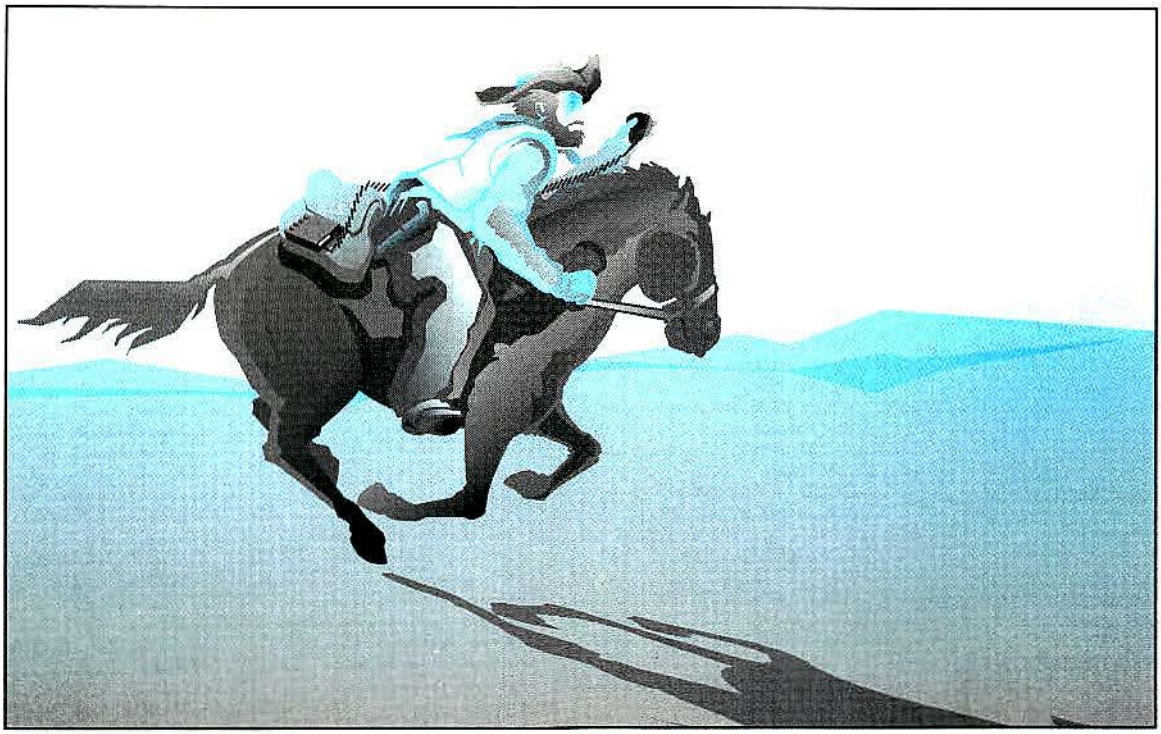
Tait Electronics U.S.A. Inc

9434 Old Katy Road, Suite 11
Houston Texas 77055. USA. Phone (1) (713) 984-868
Outside Texas 800 222-1255. Fax (1) (713) 468-694

Circle (28) on Fast Fact Card

WHAT PONY EXPRESS RIDERS MIGHT HAVE SAID
IF THEY HAD HAD A BENDIX/KING RADIO

"Two miles out! Saddle that Palomino! Pack some grub — to go!"



Pony Express riders made history in 1860 by spreading the word the old-fashioned way. If they were establishing a mobile communications system in 1992, they'd choose Bendix/King's new EMV mobile UHF radios.

With saddlebags packed tight, they'd applaud its size (it's the smallest 40-watt mobile in its class). With rough terrain ahead, they'd prize its durability (all-electronic tuning, no moving parts and a die-cast housing keep it true). With nightfall looming, they'd treasure its vacuum-fluorescent alphanumeric display (programmable to show information *you* want to see, readable day or night).

And as hard-riding Americans, they'd value a product engineered, designed and manufactured in the U.S.A.

Bendix/King's technology brings you up-to-the-minute features, including 112 channels, DTMF/ANI and the industry's widest bandwidth, 403 - 470 MHz, with no degradation in specification. Simplicity of operation, reliability, flexibility. All backed by the industry's best warranty — up to 5 years.



The Pony Express stands as a pioneer of communications history. Now, Bendix/King's EMV mobile radio is writing history of its own.

For more information and specifications, call today. You, too, could make history.

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BENDIX/KING

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Allied Signal Aerospace

See Adv. Page

D&R Associates
Danmax Communication
Delcom Radio
Direct Communications International
Dixcom
Farmark 108
Electronic Products
Ericsson GE Mobile Communications
ETrunk Systems
ExCellular Communications
Fanon Courier
Fujitsu Ten Corporation of America
Haewa Communications
Henry Radio 107
Hill Radio Communications
Hite Electronic Sales
Hutton Communications 66
ICOM America 53
Jan Industrial Electronics
E. F. Johnson Company
Kenwood USA 59
Kyodo West 69
Land Mobile Services West
M&M Communications
Marketronics
Maxon America 39
Mechem Electronics
Meridian Communications
Midland Land Mobile Radio 57
Morcom International
Motorola Land Mobile Products Sector
Multicom
Nady Systems
Neutec
New Eagle Communications
Norand
NSI Systems
Page Com
PMC Associates
The Portable Depot
Preston Communications
Procomm USA
R/M Wholesale Communications
Radio Express
Radio Systems
Radio Wholesale Marketing
Ramsey Electronics
Ranger Communications
Relm Communications 71
Repco
Ritron
Schaefer Radio
Secom Systems
Shinwa Communications of America
Smith Communications Service
Solid-State Electronics
Sonar Radio
Spectrum Communications
Standard Communications 77
SWS Security
Syntec Communications Systems
Tad Radio 86
Telemobile
Teletec
VSI Telecommunications
Wisco International
C. W. Wolfe Communications

TRANSCEIVERS, FM TRUNKING

Adams Distributing
Advanced Videotech
Air Comm
Auto-Comm Engineering
Bendix/King Mobile Communications Div. 41
California Radio
Communications Associates 99
Ericsson GE Mobile Communications
ETrunk Systems

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ExCellular Communications
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Jan Industrial Electronics
E. F. Johnson Company
Kenwood USA 59
Kyodo West 69
Marketronics
Maxon America 39
Midland Land Mobile Radio 57
Motorola Land Mobile Products Sector
PCI-Pekaar Communication
Preston Communications
Procomm USA
R/M Wholesale Communications
Relm Communications 71
RTX
Schaefer Radio
Secom Systems
Shinwa Communications of America
Sonar Radio
Standard Communications 77
Synetcom Digital
Telemobile
Wisco International
C. W. Wolfe Communications

TRANSCEIVERS, HF SSB

Auto-Comm Engineering
Canadian Marcom
Danmax Communication
GRE America
ICOM America 53
Japan Radio
Kachina Communications
Morcom International
Motorola Land Mobile Products Sector
Preston Communications
SEA
Tactical Electronics
Transworld
Wisco International

TRUNKED RADIO SYSTEMS

Adams Distributing
Air Comm
AmeriCom
Auto-Comm Engineering
Buy-Comm
California Radio
Cellular Design
CTI 76
Danmax Communication
ElectroCom Communication Systems, L.P.
Ericsson GE Mobile Communications
ETrunk Systems
ExCellular Communications
The Genesis Group
Hite Electronic Sales
IDA 97
Jan Industrial Electronics
E. F. Johnson Company
Kyodo West 69
Marketronics
Maxon America 39
Midland Land Mobile Radio 57
Motorola Land Mobile Products Sector
Neutec
PCI-Pekaar Communication
Peacocks Radio & Wilds Computer Services
Procomm USA
R/M Wholesale Communications
Radio Express
Ranger Communications
Relm Communications 71
Roberts & Company

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RTX Corporation

RTX
Schaefer Radio
SEA
Secom Systems
Sigtone
Smith Communications Service
Trident Micro Systems 67
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Danmax Communication
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Mechem Electronics
New London Technology
NS Electronics Service
Oklahoma Radio Systems ORS Paging
Paging Products International
PCI-Pekaar Communication
Procomm USA
Radio Express
Schaefer Radio

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Smith Communications Service
Sound Designers Studio
StateLine Communications
Syntec Communications Systems
Telecommunications Engineering Associates
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VLR Communications
C. W. Wolfe Communications

VOICE PROCESSING AND MESSAGE SYSTEMS

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MFJ Enterprises
Motorola Land Mobile Products Sector
Palomar Engineers
Palomar Telecom
Primus Electronics 90
Pulstar Distributing
Santa Fe Distributing 105
Sharp Communication
Talley Electronics
Telewave
Tesseo
Webster Communications
Wisco International

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Operate the following equipment from any 12vdc source including Cars, Trucks, Boats and RV's ETC.

Laptop and notebook computers
Facsimiles
Battery Chargers for laptop & notebook computers, cellular phones and camcorders.
Computer peripherals, scanners and printers.
Stereos, VCR and TV.
Test equipment, power drills and other electronic equipment.

SPECIFICATIONS

	PI-125	*PI-250W*	*PI-600W*
Output power			
30 minutes:	125 watts	250 watts	600 watts
Surge:	200 watts	500 watts	1500 watts
Continuous:	100 watts	200 watts	500 watts
Input Voltage:	10 to 15 VDC	10 15 VDC	10 to 15 VDC
Output voltage:	115 VAC RMS ± 5%	115 VAC RMS ± 5%	115 VAC RMS ± 5%
Output frequency:	60 Hz ± 2%	60 Hz ± 0.01%	60 Hz ± 0.01%
Output waveform:	modified sinewave, phase corrected	modified sinewave, phase corrected	modified sinewave, phase corrected
Efficiency:	90%	90%	90%
Low battery alarm:	10.7 V	10.7 V	10.7 V
Low battery shutdown:	10 V	10 V	10 V
Dimensions (H x W x L):	1.2" x 3.5" x 4.5"	1.5" x 4.5" x 6"	3" x 9" x 10"
Weight:	14 oz.	1.25 lbs.	5.25 lbs.
Protection features:			
Over temperature:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Overload:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Short Circuit:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Reverse polarity	Fuse	Fuse	Fuse

Circle (30) on Fast Fact Card

ASTRON CORPORATION
9 Autry • Irvine, CA 92718 • (714) 458-7277 • FAX (714) 458-0826

Services Directory

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ACCOUNTING AND BILLING

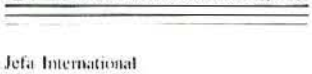
ATA Information Systems
CBIS
Celltech Cellular Information Systems
Clever Software
Communications Software
CSC Intelicom
CyberSym Control Systems
DMC Caesar Software
The Genesis Group
IDA 97
Micro-Quick Systems
Peacocks Radio & Wilds Computer Services
Sage Data Systems Div. America West C&E
Subscriber Computing
Sunrise Credit Services
Trident Micro Systems 67

BROKERAGE

Daniels & Associates
Clifton Gardiner & Associates
Ritzel Communications
Mark Rosner Belmont Properties
Spectrum Management Systems

CONSULTANTS

Adams Distributing
Adcomm Engineering
Alexander Resources
Anchor Graphics
Applied Spectrum Research
APREL
ATA Services
Lawrence Behr Associates
Caraway Communications
Clever Software
CNet
Communication Engineers
Communications Real Estate
Communications Resources
Communications Technology Associates
Comp Comm
Comsearch
CSC Intelicom
CSI Telecommunications Radio & Microwave Engineers
John J. Davis & Associates
Dispatch Specialists
E. J. Dort & Associates
Douglas Integrated Software
EDX Engineering
Encom Radio Services
Evans & Evans Associates
Frost & Sullivan
Frederick G. Griffin, P.C.
HarTech
Hayes, Seay, Mattern & Mattern
Intrafamily Communications
R.A. Isberg, P.E., Consulting Communications Engineer



Jefa International

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Kaval Electronics
Lapp Company
Lawrence Personnel
Lightning Eliminators & Consultants
Lindgren RF Enclosures
Lucas & Associates Consortium of Consultants
Marting Franchise
Master Communications
Mech-Elec Systems
Metrocom Services
Stuart Meyer Consultant
MFJ Enterprises
Mobile Communications Consulting
Mobile Data Specialists
Mobility
New Eagle Communications
Northern Controls & Communications
Norton Engineering
Omnicom
Paging Products International
Quantum Publishing
RAM Communications Consultants
RCT Consulting Engineers
Real Time Strategies
Roberts & Company
Herb Sachs Consulting
Scott Communications
SFA-Sachs/Freeman Associates
Shaffer & Associates
Herschel Shosteck Associates
Skyline Antenna Management
Sound Designers Studio
Space Com Systems
Spectrum Engineering
Spectrum Management Systems
Subscriber Computing
Sunflower Radio Products
Synetcom Digital
Technical Communications Software
Technology Futures
Telecommunications Engineering Associates
Teletech
Frank Thatcher Associates
TLP Technologies
TSR Technologies 35
Voice of the Road
Wisco International
Zebryk Engineering

EQUIPMENT REPAIR AND RECONDITIONING: MOBILES, PORTABLES, PAGERS AND OTHERS



Aaron Communication Services
Adams Distributing
Arizona Two Way Communications
ASK Communications
California Radio
Canamex Communication
Cellular Phone Services
Cetacea Sound
Don Clark Radio

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Communication Engineers
Communications & Signals
Continental Leavitt Communications
Cue Paging
Danmax Communication
DP Electronics
DupleTune
Electronic Paging Services
Encom Radio Services
ExCellular Communications
First Class Communications
General Communications 81
IDA 97
Land Mobile Services West
M&M Communications
Mech-Elec Systems
Metrocom Services
Minilec Service
Multicom
Oklahoma Radio Systems ORS Paging
Pager Communications
PageRepair
Porta-Tech
The Portable Depot
Portable Technical Services
Portacom
Reach Electronics
RTI Communications
S&I Technical Services
Scott Communications
Smith Communications Service
Synetcom Digital
Syntec Communications Systems
Unita Communications
Wholesale Cellular USA

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Adcomm Engineering
American Mobile Telecommunications Association
APREL
ATA Services
Lawrence Behr Associates
Comsearch
CSI Telecommunications Radio & Microwave Engineers
Forest Industries Telecommunications
National Association of Business & Educational Radio (NABER)
Pike & Fischer Private Radio Rule Service
Washington Information Group

LEASING AND RENTAL EQUIPMENT

Alltel Supply
Arizona Two Way Communications
Braley Communication Systems
Call One Headsets
Communications Insurance Consultants, CMT Leasing
Continental Leavitt Communications
CP Communications
Danmax Communication
Encom Radio Services
Event Rental Communication
Henry Radio 107
KanDu Leasing & Finance
M&M Communications

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Moss Communications
Portacom
RTI Communications
Scott Communications
Sound Designers Studio
Tessco
Unita Communications

SERVICE MONITOR REPAIR AND CALIBRATION

Alcom Electronics
APREL
Broadcast Communications



Communication Instruments
Cushman
First Class Communications
Microflect 82
NKX
NS Electronics Service

SOFTWARE DEVELOPMENT

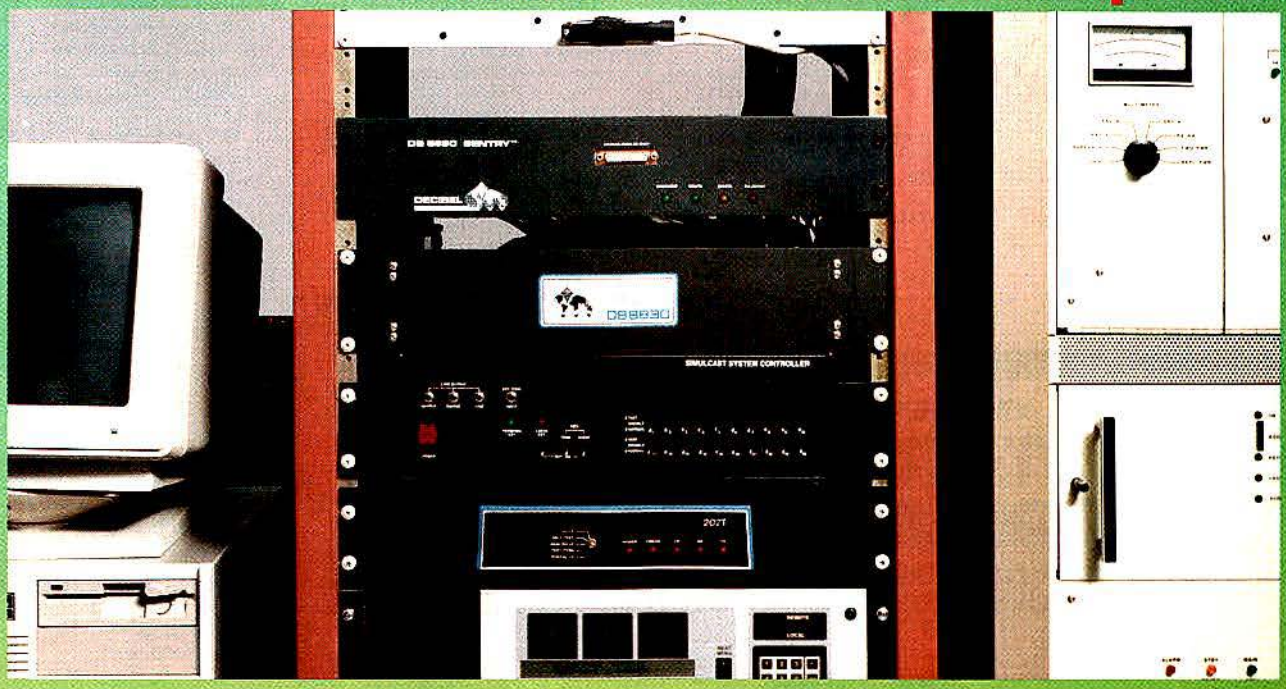
Adcomm Engineering
Applied Spectrum Research
Appropriate Data Communications
CBIS
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Clever Software
CNet
Communications Data Service
Comsearch
CyberSym Control Systems
Direct Communications International
Douglas Integrated Software
EDX Engineering
Enid 2-Way Communications
Ex Machina
Finestra
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Northern Controls & Communications
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Omnicom
Packet Cluster Systems 110
Peacocks Radio & Wild Computer Services
Pyramid Communications
Rayfield Communications
RF Data
Rocky Mountain Communications
RTI Communications
Sage Data Systems Div. America West C&E

Company Addresses begin on page 48

Decibel's customer uses over 700 Sentry™ Remote Monitors to lower its churn rate and increase profits!



DB8860 (optional keyboard) monitors, protects and controls remote sites with up to 64 Tx.

DB8830M-WTVH (tray and accessories) handles 1 or 2 Tx on separate antennas, 1 to 5 on 1 antenna.





DB8830TL monitors tower lights and reports outages in keeping with FCC regulations.

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"DB8860s and DB8830s have improved our Tx up-time dramatically. Customers no longer tell us when we have a problem, we know instantaneously. Our technicians use the Sentrys as test equipment to help solve problems. Also, we monitor temperatures, door closures, tower lights, etc.

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30-1000 MHz Sentrys are patented and light-years ahead of the competition. Use the toll-free HOTLINE to FAX us your requirements:

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Circle (31) on Fast Fact Card

SoftWright Limited Liability
Sound Designers Studio
Statistical Control Systems
Subscriber Computing
Synetcom Digital
Telecommunications Engineering Associates
TLP Technologies
TTI
U S West Public Safety Group

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Broadcast Communications
CNet
Comsearch
First Class Communications
HarTech
IDA 97
Mobile Training Institute (MTI)
Pace
Quantum Publishing
SES 106
Willmar Technical College

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Alltel Supply
American Tower Service
Arizona Two Way Communications
Auto-Comm Engineering
Lawrence Behr Associates
Broadcast Communications
Caraway Communications
Central Tower
Cesco
Communication Engineers
Communications West
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Mech-Elec Systems
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Rohn
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Skyline Antenna Management
Space Concepts
StateLine Communications
Swager Communications
Teletech
Tower Systems
TWR Communications
TWR Telecom
Unita Communications
Utility Tower
Valmont Industries ICPD Communication Products 62

TOWER SPACE RENTAL

AAT Communications Corporation

AAT Communications 78
Adams Distributing
Adelphon
Alltel Supply
Antenna Sites
Arizona Two Way Communications
Arroyo Borracho Press
ASK Communications
Auto-Comm Engineering
Lawrence Behr Associates
Broadcast Communications
Cellular Design
Chicago Tower Leasing
Communication Engineers
Communications Real Estate
Communications West
John J. Davis & Associates

Diablo Communications Inc

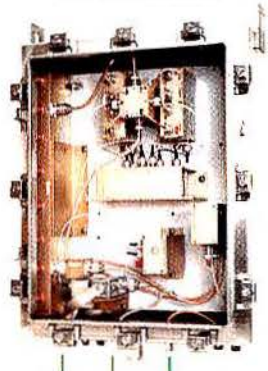
Diablo Communications
J. Doering Communications
Enid 2-Way Communications
Express Tower
Falcon Tower Fabricators
Fryer's Site Guide
Goldspar Communications
High Country Communications
Hill Radio Communications
Intrafamily Communications
Master Communications
Meridian Communications 55
MicroNet Site Management
Port Crescent Communications
Preston Communications
Quad State Towers & Communications
Ronny's Communications
Sabre Communications
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Shaffer Communications Group
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Skyline Antenna Management
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StateLine Communications
Teletech
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OFF-LINE, AND THERE WHEN YOU NEED IT. . .

FIRST TRUE BACKUP PREAMPLIFIER,

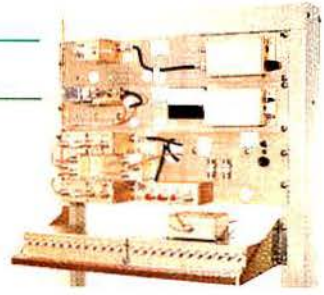
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SYSTEMS IN RANGES FROM 450 TO 960 MHz

Tower Preamp Test Cable
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Company Addresses begin on page 48

THREE DIFFERENT MICS. THE SAME EXACTING SHURE STANDARDS.

If you're looking for a high-quality mic with the features you need at a price you can afford, Shure has the answer. Three mics designed to fit the needs and budgets of practically any user and built tough to give you the reliability you've come to expect from Shure.

885TT DTMF – QUALITY THAT'S AFFORDABLE. The 885TT gives you an unbeatable combination of economy, dependability, audio quality, and ease of use. It's a continuous-tone DTMF microphone that sets new standards for value and performance.

Features include:

- Illuminated keypad – designed to last and requiring no extra wiring in most cases.
- Million-Cycle Leaf Switch™ – a Shure exclusive, giving you longer trouble-free use.
- Positive tactile feel keys and audible tone to help make number entry easy and accurate.
- Externally adjustable audio and DTMF levels for easy installation.
- Tailored frequency response and Top-Talk Sound Channels™ provide optimum clarity and intelligibility.

890TT DTMF – THE PROGRAMMABLE CHOICE. The 890TT is a burst-mode DTMF microphone with all the features of the 885TT, plus programmable functions, including:

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- Last number redial.
- Lithium battery keeps the programmed memory safe for years.

590T – A DYNAMIC PERFORMER. The 590T, featuring a Shure amplified dynamic cartridge, is ideally suited to a wide range of mobile installations. Tailored frequency response provides optimum voice articulation while it discriminates against other sounds. The 590T is a workhorse designed to provide trouble-free service under the harshest conditions.

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Company Addresses

...A...

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Fax: 303-337-3084

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718-351-8787
Fax: 718-351-2525

AAT Communications
30 Campus Plaza
Edison, NJ 08837-3911
908-417-3993
Fax: 908-417-4825

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22511 Aspan St., Suite B/C
El Toro, CA 92630-6321
714-581-4900; 800-623-6366
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Ace Communications Monitor Div.
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317-842-7115; 800-445-7717
Fax: 317-849-8794

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Fax: 313-584-8330

ADC Telecommunications
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Fax: 206-821-8827

Adcour
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Fort Worth, TX 76111
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Fax: 215-322-4606

Advanced Computer Controls
2356 Walsh Ave.
Santa Clara, CA 95051
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Fax: 408-727-3413

Advanced Fox Antennas
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Huntington Valley, PA 19006
215-322-4600; 800-233-0013
Fax: 215-322-4606

Advanced Receiver Research
P.O. Box 1242C
Burlington, CT 06013
203-584-0776
Fax: 203-485-0311

Advanced Tech Com
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Lawrence, MA 01843
508-682-1327
Fax: 508-682-5211

Advanced Videotech
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Fax: 215-322-4606

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Fax: 404-446-0420

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Fax: 508-683-4324

Alpha Industries
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Woburn, MA 01801
617-935-5150
Fax: 617-935-4939

Aluma Tower
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Vero Beach, FL 32961-2806
407-567-3423
Fax: 407-567-3432

Am/Comm Systems
1801 Ocean Ave.
San Francisco, CA 94112
415-239-4188
Fax: 415-239-4250

American Mobile Telecommunications Association
1835 K St. N.W., Suite 203
Washington, DC 20006
202-331-7773
Fax: 202-331-9062

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1702 S. Val Vista Drive
Mesa, AZ 85204
602-267-1491; 800-648-6937
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214-242-0439
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516-273-6800
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Fax: 800-851-9009

The Antenna Company
2525 Braga Drive
Broadview, IL 60153
708-345-8811; 800-458-2820
Fax: 708-345-0515

Antenna Farm
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Overland Park, KS 66214
913-492-6212; 800-255-6222
Fax: 913-492-2948

Antenna Sites
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Scottsdale, AZ 85258
602-451-7702

Antenna Specialists
30500 Bruce Industrial Parkway
Cleveland, OH 44139-3996
216-349-8400
Fax: 216-349-8407

Antenna World
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Miami, FL 33172-2830
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Boulder, CO 80301
303-444-4871
Fax: 303-444-4872

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GA, Marietta 800-446-4969
IL, Joliet 815-744-6444
IL, Joliet 800-767-7605
MD, Hunt Valley 410-472-7000
MA, East Weymouth 617-337-5730
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MN, St. Paul 612-645-3411
NJ, Clifton 800-631-7297
NC, Raleigh 919-779-2708
OH, Cincinnati 513-489-1755
TX, Dallas 214-239-0580
WA, Bellevue 206-453-2132

AT&T
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708-605-5007
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Product Directory begins on page 14

FUTURE SHOP

R2600



All that test equipment you've been using, with its endless cabling and "we mean business" knobs and switches, has served you well over the years. But someday you're going to need to replace it. That someday is today!
Digital testing is a reality; Cellular testing is big business; Software-driven testing is the future, and it's all available now in one box... the R2600 from Motorola.

The R2600 can provide:

- 1GHz Signal Generator
- Sweep Generator
- Duplex Offset Generator
- AC/DC Voltmeter
- Sensitive Off-the-Air Receiver
- Audio Generators
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- Full Screen Spectrum Analyzer with Audio
- SINAD & Distortion Meters
- Terminated Wattmeter
- Signalling Simulator & Decoder
- Signal Strength Meter
- Full Screen Digital Oscilloscope
- 50 MHz Tracking Generator Option
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- Subscriber Unit & Cellular Base Station Test Options

The R2600 features: 30 Test Set-Up Memories; Built-in Self Calibration: RS-232 Remote Control; Operator Selectable Special Functions; Help Screens; and a Color Monitor Port.
Easy to use, easy to setup, transportable, intuitive to operate, economical, and upgradeable: with the R2600 you will always be ***future shop.***

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MOTOROLA

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ATA Services
2200 Mill Road
Alexandria, VA 22314
703-838-1900
Fax: 703-684-5726

Atis
1225 Northmeadow Parkway, #114
Roswell, GA 30076
404-664-4744; 800-688-4744
Fax: 404-664-5558

Atkinson Dynamics
10-B W. Orange Ave.
South San Francisco, CA 94080
415-583-9845

Atlantic Solar Products
P.O. Box 70060
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410-686-2500; 800-537-1566
Fax: 410-686-6221

Atlas/Soundolier
1859 Intertech Drive
Fenton, MO 63026
314-349-3110; 800-876-7337
Fax: 314-349-1251

Auburn Technology
6535 S.W. Wanamaker Road
Auburn, KS 66402-9653
913-862-2229

Audiovox
150 Marcus Blvd.
Hauppauge, NY 11720
516-231-7750
Fax: 516-231-7897

Austin Antenna
10 Main St.
Gonic, NH 03839
603-335-6339
Fax: 603-335-1756

Auto-Comm Engineering
3014 Cameron St.
Lafayette, LA 70506
318-232-9610; 800-284-1840
Fax: 318-232-2270

Auto-Trac
9330 LBJ Freeway, Suite 380
Dallas, TX 75243
214-480-8145
Fax: 214-907-2298

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Westlake Village, CA 91361
805-497-4620

Automation & Electronics Engineering
13667 Floyd Circle
Dallas, TX 75243
214-238-9393; 800-527-4596
Fax: 800-383-9180

AVA Electronics
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Drexel Hill, PA 19026
215-284-2500; 800-331-8838
Fax: 215-259-8379

Avcom of Virginia
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Richmond, VA 23236
804-794-2500
Fax: 804-794-8284

AVTEC
4335 Augusta Highway
Gilbert, SC 29054
803-892-2181
Fax: 803-892-3715

AW Enterprises
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Bedford Park, IL 60638-6413
708-458-8989; 800-334-4884
Fax: 708-458-9023

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B&K Precision
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Fax: 312-804-9425

Bally Engineered Structures
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Fax: 215-845-6110

Band-It-Idex
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Denver, CO 80216-0307
303-320-4555
Fax: 303-333-6549

Barnett Electronics
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North Little Rock, AR 72116
501-835-7066
Fax: 501-835-8766

Barnett Engineering
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Calgary, Alta
Canada T2H 2L9
403-255-9544; 800-268-2646
Fax: 403-259-2343

Battery Products
P.O. Box 167
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Fax: 414-367-8302

Bee Electronics
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Broadview, IL 60153
708-345-0337; 800-336-3115
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Beepers To Go
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516-365-2337
Fax: 516-365-6050

Lawrence Behr Associates
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Fax: 919-752-9155

Bendix/King Mobile Communications Div.
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Lawrence, KS 66046
913-842-0402; 800-648-0947
Fax: 913-841-0287

Berry Controls
23 N. Central Ave.
Canonsburg, PA 15317
412-746-8888
Fax: 412-746-9189

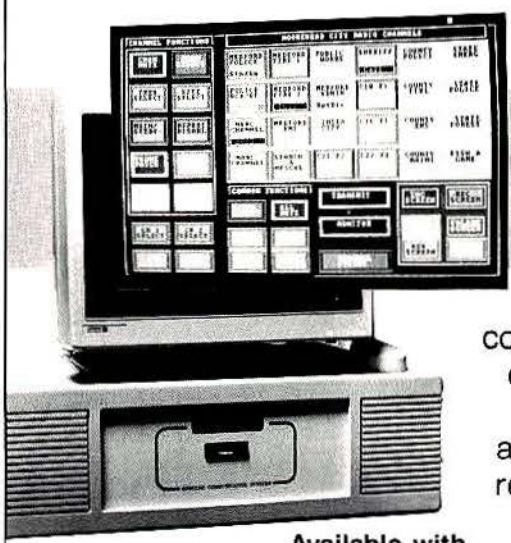
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608-565-7200; 800-356-5794
Fax: 608-565-2221

Bird Electronic
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Cleveland, OH 44139
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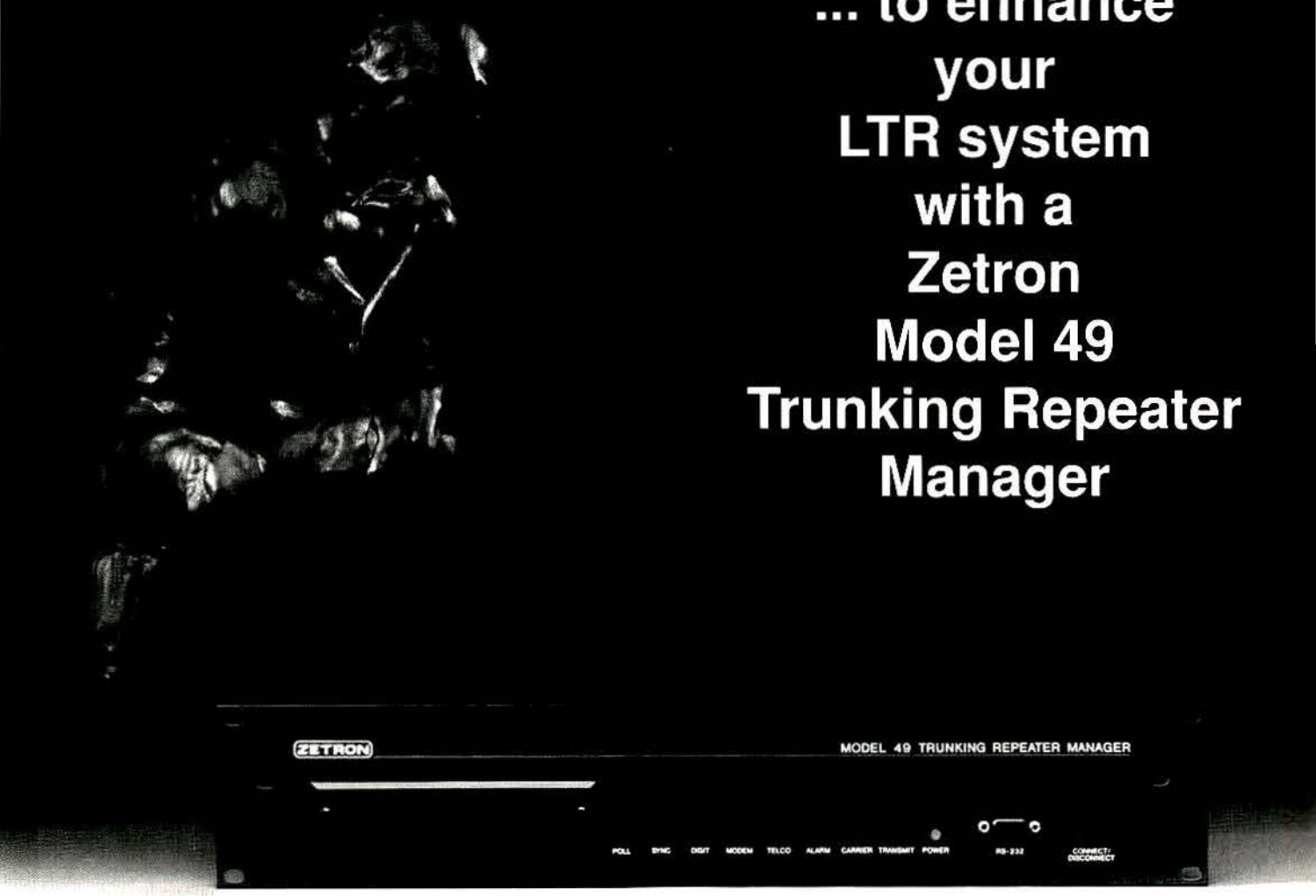
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Fax: 201-584-3037

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Fax: 617-592-6148

Braley Communication Systems
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Bramco
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Fax: 513-773-8003

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Fax: 707-446-7064

Broadcast Communications
98 Highway 69 N.
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608-527-5670
Fax: 608-527-5674

Brunelle Instruments
P.O. Box 1223
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Burke Communications Systems
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Oak Park, IL 60302
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Cal Crystal Lab
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Fax: 714-491-9825

Cal-Scope
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Sunnyvale, CA 94086
408-730-4573

California Radio
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Montrose, CO 81401
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Fax: 303-249-4334

Call One Headsets
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514-341-7630
Fax: 514-340-3006

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Canada L3R 5M1
416-475-5557; 800-387-4237
Fax: 416-475-5568

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Dallas, TX 75238
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Fax: 516-921-7330

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Fax: 707-923-2655

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Fax: 513-489-1449

Catcom Systems
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Fax: 416-856-5972

CBIS
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Canoga Park, CA 91304
818-773-2020
Fax: 818-700-1300

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Madison Heights, MI 48071
313-588-3894; 800-262-2677
Fax: 313-585-3334

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Fax: 713-873-3018

Cellular Design
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Cellular Enterprises
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813-885-7766; 800-226-4545
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MA, North Scituate 617-545-0652
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NJ, Sommerset 908-563-0366
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Fax: 407-679-8110

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614-846-4733; 800-642-7698
Fax: 614-846-0864

Cetacea Sound
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Channel Element Headquarters
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Fax: 513-542-8066

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Chicago Tower Leasing
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708-823-7713

Childs Antennas
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507-362-4214; 800-533-0998
Fax: 507-362-4215

Cimarron Technologies
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Escondido, CA 92029-1919
619-738-3282; 800-487-7184
Fax: 619-480-0233

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Miami, FL 33169
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Fax: 305-621-0766

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Fax: 508-753-5827
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IL, Chicago 708-657-7575
PA, Philadelphia 215-343-5334
TX, San Antonio 512-654-7568
WA, Seattle 509-921-0319

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Blackfoot, ID 83221
208-785-1430

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Fargo, ND 58103
701-237-0095
Fax: 701-237-0228

CML Technologies
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Hull, Que.
Canada J8Z 3G4
819-778-2053
Fax: 819-778-3408

CNet
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Richardson, TX 75081
214-690-3333; 800-332-2638
Fax: 214-690-8333

Coaxial Dynamics
15210 Industrial Parkway
Cleveland, OH 44135
216-267-2233; 800-262-COAXIAL
Fax: 216-267-3142

Coded Communications
2375 Camino Vida Roble
Carlsbad, CA 92009
619-431-0077; 800-228-6367
Fax: 619-431-1372

Coherent Communications
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Hauppauge, NY 11788
516-231-1550; 800-443-0726
Fax: 516-231-0018

Com-Rad Industries
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Fax: 716-751-9879

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813-355-2779; 800-422-1766
Fax: 813-355-2770

Comark Distributing
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Combined Technologies
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Cincinnati, OH 45240
513-595-5900

Comm-Net 2000 Communications/ Manufacturing
P.O. Box 20
Winchester, OR 97495
503-672-6475; 800-283-5158
Fax: 503-672-6475

The CommLine BBS
P.O. Box 5631
Toledo, OH 43613
313-854-6441

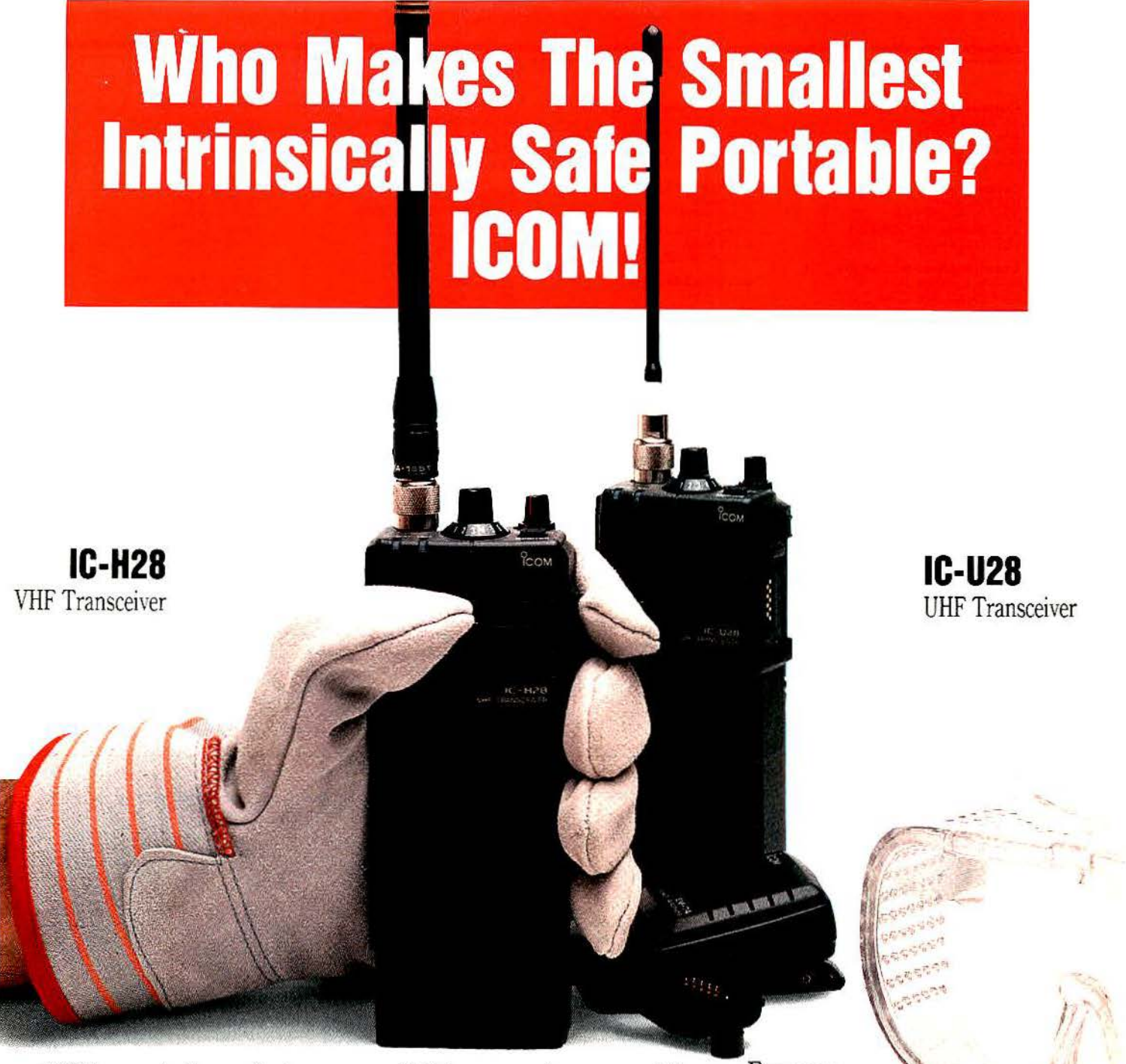
Commonwealth Communications Industries
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Ashland, VA 23005
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Fax: 804-798-5114

Communication Engineers
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Falls Church, VA 22044
703-534-0034; 800-441-0034
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Fax: 602-961-0868

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Fax: 818-333-0215

Comp Comm
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Collingswood, NJ 08108-2167
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Fax: 609-854-8400

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Fax: 217-223-0968

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Fax: 703-476-2787

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Fax: 508-688-7829

Continental Leavitt Communications
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Contor Terminals
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Canada L4W 1S5
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Control Signal
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Denver, CO 80227
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Fax: 303-989-8003

Conway Engineering
8393 Capwell Drive
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510-568-4028; 800-626-6929
Fax: 510-568-1397

Cooks Communications
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Chula Vista, CA 91912
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505-325-5336
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Fax: 914-423-6689

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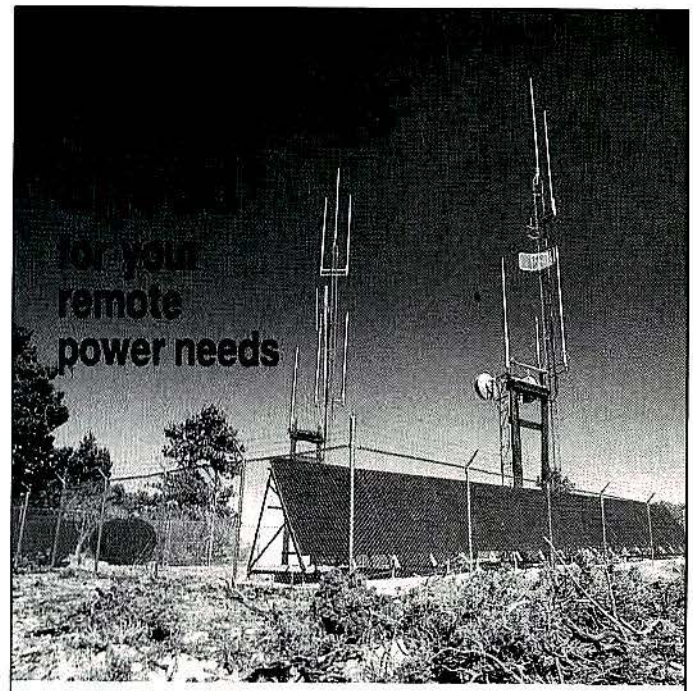
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Serving all of California.

In the fast-paced communications business, it seems like the rules of the game change every day. But for more than 30 years, you've been able to count on two things; Meridian Communications in Southern California and Diablo Communications in Northern California.

And with these two seasoned pros in site management on the same team, you can access over 68 prime antenna sites throughout California without chasing after multiple sources.

In the north, Diablo operates 31 sites covering the Central Valley from Fresno to Chico and the San Francisco Bay Area. And in the south, Meridian operates 37 sites ranging from Santa Barbara to the Mexican border.

No other company offers the selection and superior service that Meridian and Diablo, acting as a combined source, provide. These antenna sites are some of the most sought after and unique sites in the country.

At most sites you'll find essential services such as stand-by power, air conditioning, security and maintenance. And at many sites, you'll find master antenna systems. But, moreover, it's our caring and appreciative approach to serving your needs that will really win you over.

With Meridian and Diablo, no matter where you are in California, the ball's in your court.

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Fax: 305-566-5971

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Newport Beach, CA 92660
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Fax: 714-476-8759

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Birmingham, AL 35215
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Fax: 800-489-2616

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San Francisco, CA 94129-0002
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Fax: 415-387-7201

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Corinth, MS 38834
601-287-8081; 800-752-3646
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714-752-9200; 800-824-9755
Fax: 714-833-9336

Curtis Electro Devices
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Fax: 415-964-3574
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Cushcraft/Signals
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Fax: 800-258-3868

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Fax: 408-432-8359

CyberSym Control Systems
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Cycomm
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Portland, OR 97223
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Fax: 503-620-8089

CZ Labs
P.O. Box 126
Congers, NY 10920
914-268-5056; 800-423-2322
Fax: 914-268-5350

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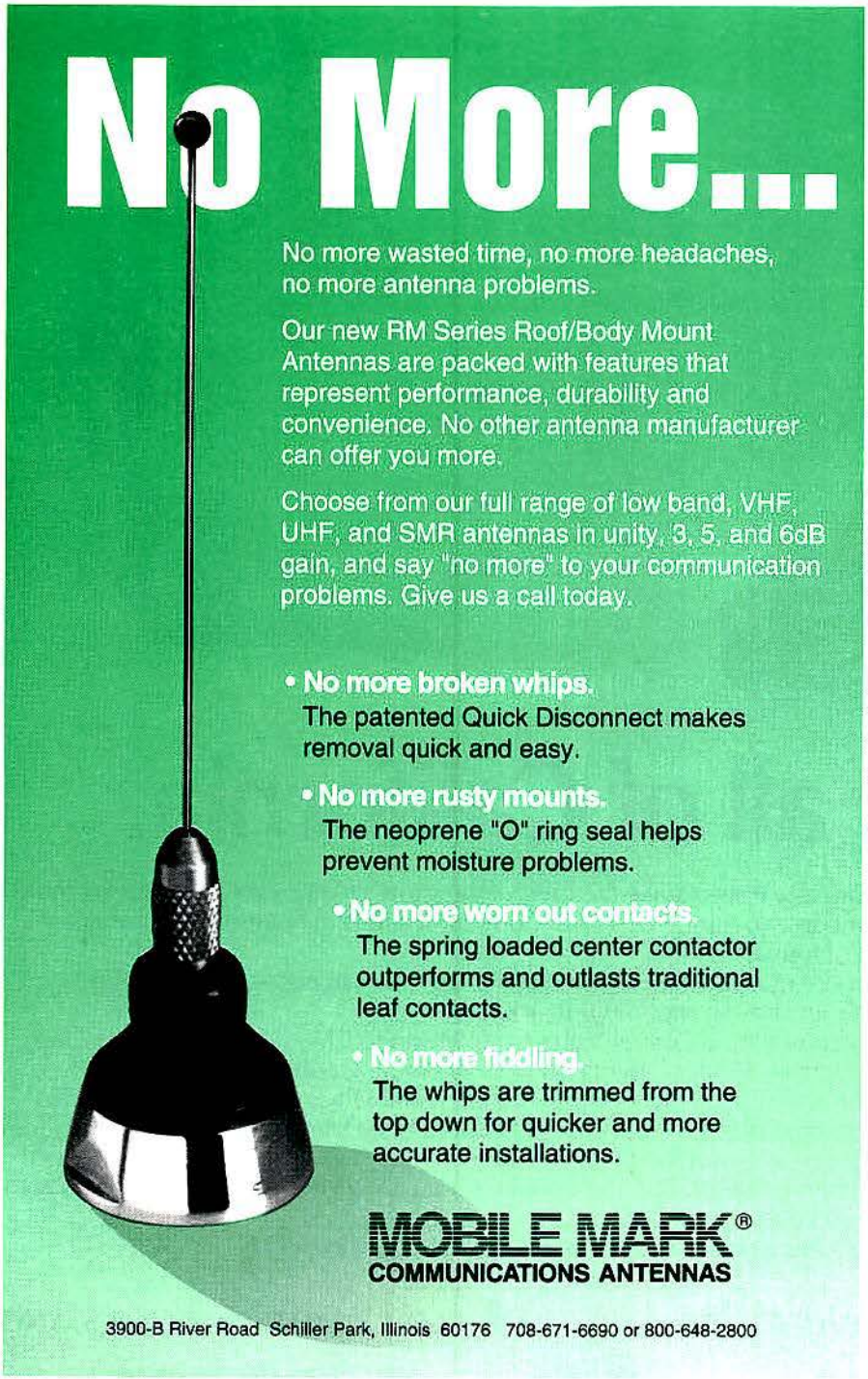
D&L Communications
3512 Cavalier Drive
Fort Wayne, IN 46808
219-484-0466; 800-336-6825
Fax: 219-483-5584

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Fax: 309-693-0668

Jack Daniel Company
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800-NON-TOLL
Fax: 714-980-3244

Daniels & Associates
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Denver, CO 80209
303-778-5555
Fax: 303-778-5599

Daniels Electronics
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Victoria, BC
Canada V8V 1P8
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Fax: 604-382-6139



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Product Directory begins on page 14

Midland strikes again!



The first practical way to trunk your conventional UHF repeaters.

New Syn-Tech™ trunked/conventional mobiles have all the logic built-in!

Midland Syn-Tech Trunking: a simple, inexpensive way to trunk existing repeaters with no major up-front investment. No interconnection, no exotic site hardware or software. It can easily double present channel loading . . . and provides users a much better level of service, too!

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Syn-Tech EXP™ Model 70-1526BT (25W, 450-470 MHz): programmable for up to eight trunked/conventional channels.



Syn-Tech XTR™ Models 70-1530/1630BT (30W, 450-470 MHz): programmable for up to 22 trunked/conventional channels (99 optional), two trunked groups.



***Free information package** explains how Syn-Tech Trunking can double the capacity of your community repeaters . . . and how you can get started today with virtually no capital investment. Call* **1-800/MIDLAND**, *Ext. 1690.*

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Canada X1A 2N9
403-873-6961
Fax: 403-873-6861

DAPA Communications
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Allegany, NY 14706
716-373-7228
Fax: 716-373-5758

Data Signal
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Albany, GA 31708
912-883-4703
Fax: 912-883-4766

DataCom Systems
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Quincy, IL 62301
217-222-0160
Fax: 217-222-0912

Dataprobe
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Englewood, NY 07631
201-569-6464
Fax: 201-894-0939

Dataradio
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Suite C 200
Atlanta, GA 30328
404-392-0002
Fax: 404-392-9199

John J. Davis & Associates
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Sierra Madra, CA 91025-0128
818-355-6909
Fax: 818-355-4890

db Mobile
4936 Sharp St.
Dallas, TX 75247
214-630-2112; 800-388-2112
Fax: 214-688-1616

DCT: Network Analyzers
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Des Plaines, IL 60018
708-827-2282; 800-282-3852
Fax: 708-827-2280

Decibel Products
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Dallas, TX 75356-9610
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Fax: 214-631-4706
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CO, Denver 303-820-2929
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IL, Hoffman Estates 708-882-2190
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IL, Joliet 800-435-1636
KS, Overland Park 800-255-6222
MD, Sparks 800-638-7666
NJ, Clifton 800-631-7297
OH, Cincinnati 800-543-8614
TX, Dallas 800-442-3811
Australia, Miller, NSW 61-2-607-8811
Canada, Niagara-On-The Lake, Ont. 416-646-2746
England, Runfold, Surrey 44-2-518-3455
Germany, Hasbergen 49-5405-3310
Singapore, 65-459-8288

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San Carlos, CA 94070
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Fax: 415-593-2680

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Point Richmond, CA 94801-4134
510-236-3700
Fax: 510-236-3799

Dictaphone
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Stratford, CT 06497-2559
203-381-7000; 800-447-7749
Fax: 203-381-7100
Regional Sales Offices
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CT, Stratford 203-381-4549
FL, Altamonte Springs 407-774-1090
NY, New York 212-972-2525
OH, Worthington 614-436-5951

Dinet
2611 Temple Heights Drive, Suite F
Oceanside, CA 92056
619-724-5355
Fax: 619-724-6209

Direct Communications International
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Franktown, CO 80116
303-688-8071
Fax: 303-688-8243

Direct Conversion Technique
3132 N. Lowell Ave.
Chicago, IL 60641
800-282-3852

Discovery Distributing
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Canada V5T 1A6
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Fax: 604-876-9229

Dispatch Specialists
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503-535-3724; 800-582-0184
Fax: 503-535-3724

Dixcom
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Fort Lauderdale, FL 33310
305-563-1333; 800-359-5400
Fax: 305-563-1378

DMC Caesar Software
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Fair Oaks, CA 95628
916-965-0305
Fax: 916-965-7168

J. Doering Communications
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Alhambra, CA 91803
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Fax: 818-308-3909

If you ever DF from 25 to 1000 MHz and need to do it unobtrusively, you'll want the TD-L8630P-II



Hardly anyone will notice.

This compact unit from Simrad/Taiyo provides radio direction finding capabilities on all frequencies from 25 to 1000 MHZ (also 1.6 to 25 MHZ with optional antenna). Easily portable, the unit comes with a camera bag sized case with shoulder strap. The unit also operates as a monitor receiver from 100 kHz to 2 GHz. A hand-held antenna with pistol grip is supplied standard, or for covert operation a special flat antenna is mounted directly on the main unit. Bearing is indicated by a circular LED display and a meter shows field strength. Spare rechargeable battery, charger and carrying case are included. Police, defense, security, and other intelligence operators no longer have to worry about jammed communications. If you need to locate interference or other RF source, the 8630P-II is the tool for you. And hardly anyone will notice. Send for complete information today, or call toll-free 1-800-426-5565.



Simrad. A name you can trust.

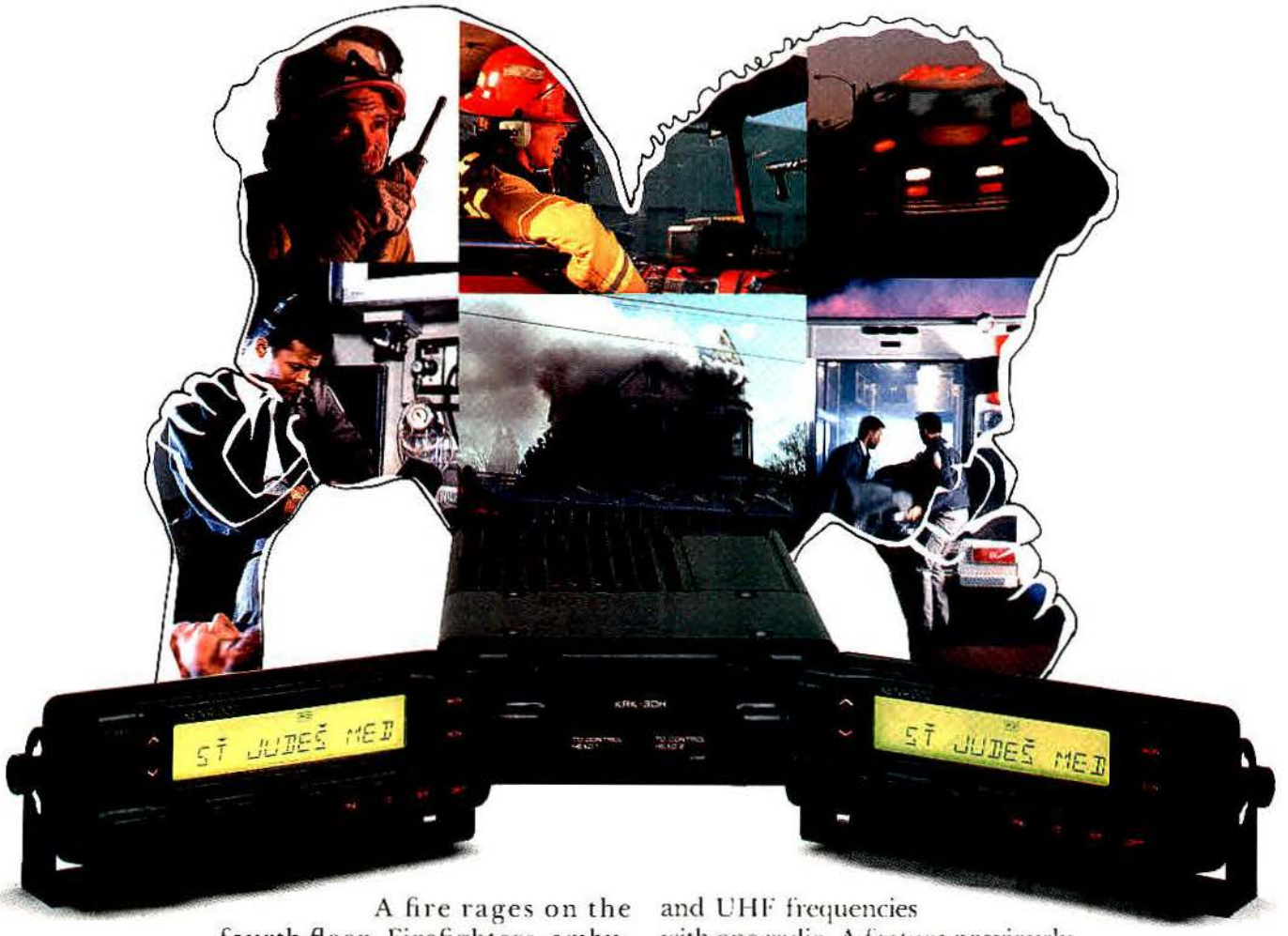
SIMRAD, Inc.
19210 33rd Avenue West
Lynnwood, WA 98036
Telephone: (206) 778-8821
Toll-free: (800) 426-5565

SIMRAD

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Product Directory begins on page 14

SPLIT DECISIONS



A fire rages on the fourth floor. Firefighters, ambulance and police have been dispatched with lightning quick speed. In emergency situations immediate and clear communication with various inter-agency departments can mean the difference between life and death.

Communicating with any of these departments while en route used to mean relaying messages and wasting valuable time. With Kenwood's new TK-630/730/830 Series, coordinating rescue operations, crowd control and medical treatment can now be done on one radio. Call on Kenwood's new 2-way radios and ensure direct and effective response to any developing situation.

The TK-630, 730, 830 Series can be customized for many applications, allowing for future expandability as needs arise. With the **dual-control head version,** communication can now be carried out from two separate locations in the vehicle. With a full range of control options from each head. Or with the **dual-band version,** vital and time sensitive information can be transmitted instantly on VHF and UHF frequencies with one radio. A feature previously found only in more expensive radios. And unlike other radios requiring expensive add-ons, the TK-630, 730, 830 Series comes with these standard features:

- **Built-in Public Address**
- **Backlit LCD and Buttons**
- **Assignable buttons**
- **12 Character Alpha-numeric capability**
- **Single or Dual Priority Scan**
- **Speaker Control**
- **Talk Around and many others....**

Offering the same product reliability that has made Kenwood the respected name in electronics for over 30 years, the TK-630, 730, 830 Series is built Kenwood tough, now using enhanced specifications to meet your most demanding challenges.

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Company _____

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P.O. Box 2780
Carefree, AZ 85377
602-488-9755
Fax: 602-488-1295

E. J. Dort & Associates
P.O. Box 12546
Research Triangle Park,
NC 27709-2546
919-544-9476

Douglas Integrated Software
1300 Executive Center Drive
Suite 520
Tallahassee, FL 32301
904-656-8673; 800-845-0408

Dowit Service
P.O. Box 433
Towaco, NJ 07082
201-335-7373; 800-524-0253
Fax: 201-335-0694

DP Electronics
152 Floyd Ave.
Bloomfield, NJ 07003
201-748-6334
Fax: 201-743-3195

Drive Phone
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Paramus, NJ 07653-0588
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800-937-7466 Ext 341
Fax: 201-843-0778

DupleTune
303 Fries Road
Tonawanda, NY 14150
716-834-2787

DuPont Building
P.O. Drawer AE
Cameron, LA 70631
318-775-5928
Fax: 318-775-5268

Duracell
Berkshire Industrial Park
Bethel, CT 06801
203-791-3274; 800-431-2656
Fax: 203-791-3273

DW Electrochemicals
97 Newkirk Road N.
Richmond Hill, Ont.
Canada L4C 3G4
416-508-7500
Fax: 416-508-7502

DX Radio Systems
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Los Angeles, CA 90065-1417
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Fax: 213-254-3210

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603-880-4411; 800-233-8639
Fax: 603-880-6965

Dynatek Communication Distributors
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Warminster, PA 18974
215-672-5000; 800-662-1411
Fax: 215-672-7705

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E Tip
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708-530-8393
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Eastcom Industries
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Fax: 416-850-2560

EDX Engineering
P.O. Box 1547
Eugene, OR 97440
503-345-0019
Fax: 503-345-8145

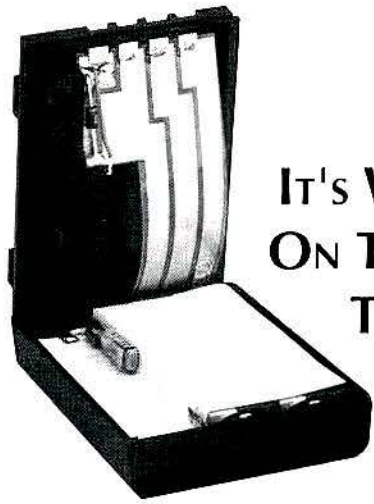
EG&G Electro-Optics
35 Congress St.
Salem, MA 01970
508-745-3200; 800-950-3441
Fax: 508-745-0894

Electro Dynamics Crystal
9075 Cody
Overland Park, KS 66214
913-888-1750
Fax: 913-888-1260

ElectroCom Communication Systems, L.P.
P.O. Box 95080
Arlington, TX 76005-1080
Fax: 817-695-3044

Electronic Paging Services
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Carrollton, TX 75007
214-242-1887
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It performs as well on the inside as it looks on the outside.

Alexander® Batteries

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Circle (45) on Fast Fact Card

Product Directory begins on page 14

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Solid rod, free-standing or guyed towers custom designed to your specifications.

OUR PIROD TOWER DIDN'T EVEN SHIVER.



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Wheeling, IL 60090
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Fax: 708-520-0085

Elite Building
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Sterling, CO 80751
303-522-8833; 800-942-4667
Fax: 303-522-8839

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Phoenix, AZ 85027
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Fax: 602-582-9499

Encom Radio Services
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Calgary, Alberta
Canada T2E 7J9
403-230-1122
Fax: 403-276-9575

Endeco Div. of Leads Metal Products
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Indianapolis, IN 46202-2748
317-631-7200
Fax: 317-631-7237

Enhanced Systems
6961 Peachtree Industrial Blvd.
Norcross, GA 30092
404-662-1503
Fax: 404-242-1630

Enid 2-Way Communications
216 E. Willow
Enid, OK 73701
405-234-1584
Fax: 405-237-5125

Enviro-Buildings
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Quincy, IL 62301
217-222-5453; 800-728-5454
Fax: 217-228-2424

Ericsson GE Mobile Communications
Mountain View Road
Lynchburg, VA 24502
804-528-7000; 800-GE-12345
Fax: 804-528-7489

Ericsson Paging Systems
P.O. Box 559
Old Greenwich, CT 06870
203-661-8194; 800-777-8194
Fax: 203-661-8936

ESA Telecommunications
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Chicago Ridge, IL 60415
708-424-6464
Fax: 708-424-6492

ETrunk Systems
1940 Commerce St.
Yorktown Heights, NY 10598
914-245-1128; 800-292-9723
Fax: 914-245-2382

Europa Marketing
2358 S. Patterson
Mesa, AZ 85202
602-345-6666

Evans & Evans Associates
2803 Southwood Drive
East Lansing, MI 48823
517-351-3252

Event Rental Communication
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Portland, OR 97214
503-232-9031; 800-283-COMM
Fax: 503-232-7384

Ex Machina
45 E. 89th St., Suite 39-A
New York, NY 10128-1232
718-965-0309; 800-238-4738
Fax: 718-832-5465

ExCellular Communications
1411 N. Batavia St., Suite 110
Orange, CA 92667
714-744-4300
Fax: 714-744-2524

Exeltech
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Fort Worth, TX 76118-6324
817-595-4969; 800-886-4683
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Fax: 915-658-5192

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318-377-1030; 800-824-2614
Fax: 318-377-5756

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406-587-8722

First Class Communications
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Irving, TX 75061
214-438-1215; 800-232-3101
Fax: 214-438-1283



Circle (47) on Fast Fact Card

Product Directory begins on page 14



A. *Model CT300*

- *Johnson LTR® encode and decode*
- *POCSAG, NEC, GOLAY*
- *DTMF encode and decode*
- *GE Mark V*
- *5/6 tone Sequential*
- *DCS, off the air*



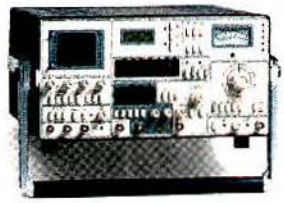
B. *Model CT2100*

- *Rugged and reliable*
- *Bench quality...field portable*
- *High resolution dual LCD displays*
- *Microprocessor driven*
- *Memory storage*
- *Battery operated*



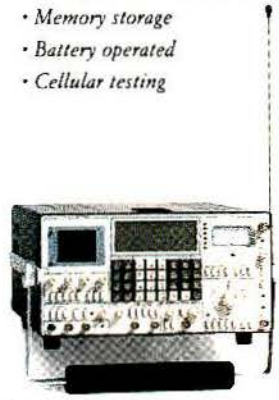
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Fax: 615-377-2383

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Metairie, LA 70002
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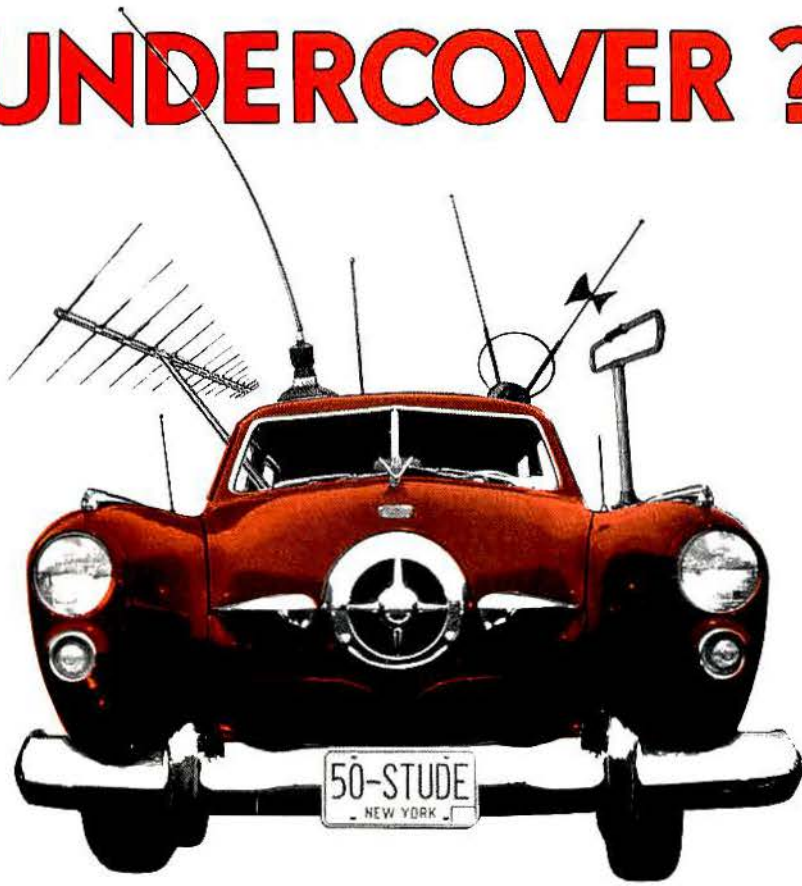
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Fax: 702-827-6060

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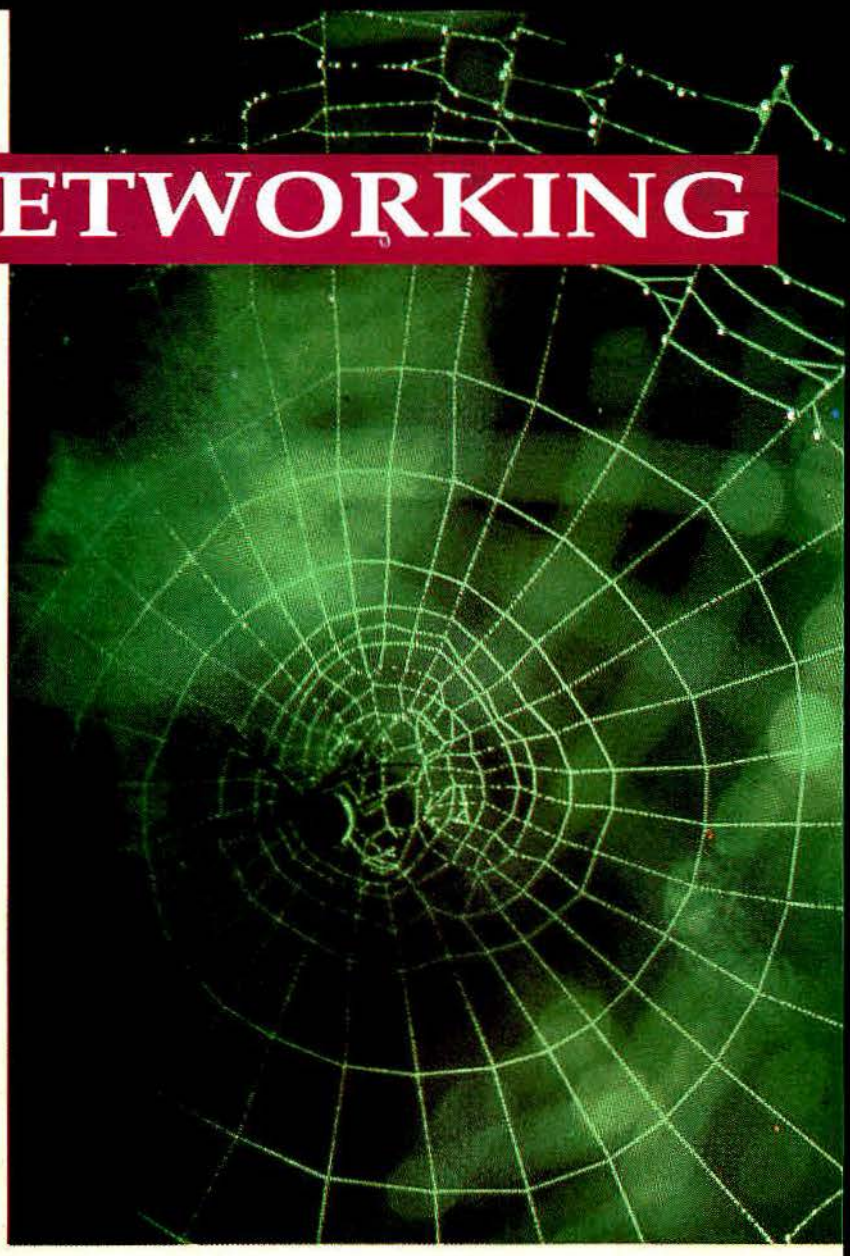
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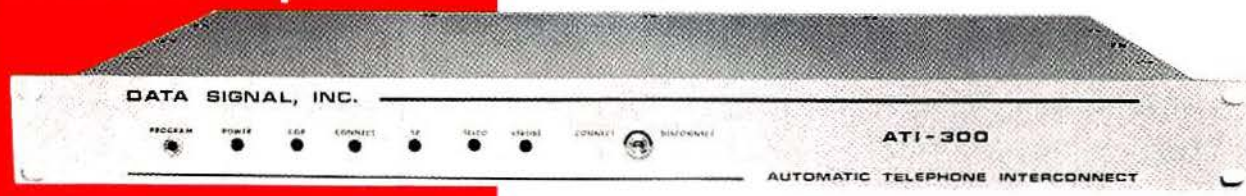
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Fax: 908-636-1813

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913-339-6767
Fax: 913-339-6568

Kustom Signals
9325 Pflumm
Lenexa, KS 66215-3347
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Kyodo West
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Bridgeville, PA 15017
412-281-7895; 800-535-2082
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Fax: 215-783-6008

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Fax: 919-752-9155

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Fax: 717-933-5653

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Vandalia, OH 45377
513-454-2323
Fax: 513-898-8621

Lunar Industries
9353 Activity Road, Suite I
San Diego, CA 92126
619-549-9555
Fax: 619-549-2346

Lynn-Arthur Associates
2350 Green Road, Suite 160
Ann Arbor, MI 48105
313-995-5590
Fax: 313-995-5989

...M...

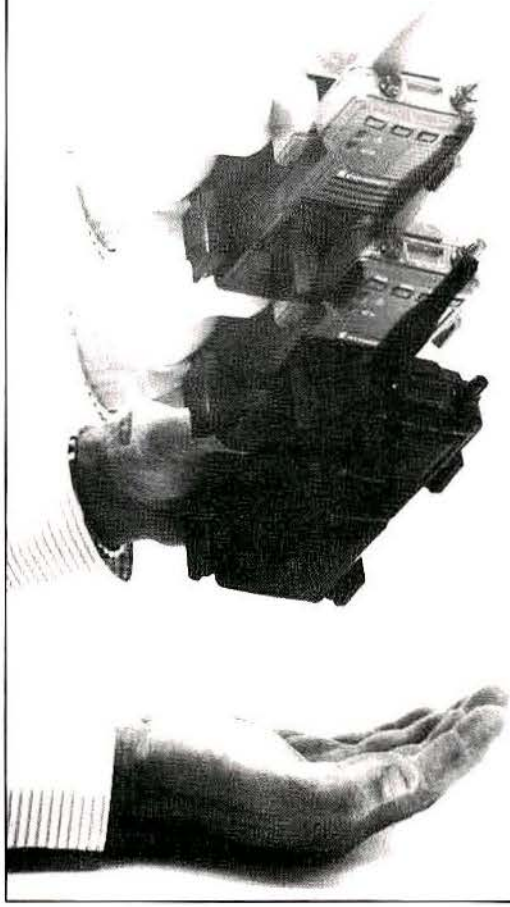
M&M Communications
P.O. Box 416
Youngsville, NC 27596
919-556-5999

M-Tron Industries
P.O. Box 630
Yankton, SD 57078
605-665-9321; 800-762-8800
Fax: 605-665-1709

Magellan Systems Corp.
960 Overland Court
San Dimas, CA 91773
714-394-5000
Fax: 714-394-7050

Magnasync/Moviola
1135 Mansfield Ave.
Hollywood, CA 90038
213-962-0382
Fax: 213-962-8601

Product Directory begins on page 14



DON'T TRY THIS WITHOUT A PORTAGRIP®.

If you turn an ordinary portable two-way radio holder over and give it a shake, chances are the radio will pop out. But with a PortaGrip from PanaVise, the radio stays firmly in place. This means that when you install a PortaGrip in your vehicle, your hand-held two-way radio will be right where you want it. You won't lose it during a quick stop or a sharp turn!

The PortaGrip attaches to any AMPS-compatible cellular phone mount and has independently adjustable jaws for a custom fit (holds radios 1.6 to 2.6" wide), "sure-grip" soft jaw pads that won't scratch your radio, and easy "one-hand" operation. Plus, it's competitively priced, available with or without a Slimline phone mount, and includes complete installation instructions.

So go ahead – try this test at home. But don't try it without a PortaGrip! For more information, contact PanaVise or your local representative.



PANAVISE®

PANAVISE PRODUCTS, INC.
1485 Southern Way, Sparks, NV 89431
Phone: (702) 353-2900 Fax: (702) 353-2929

Radio not included. PortaGrip (Model #701) sold separately or with a Slimline car phone mount. PortaGrip is made in the USA and is a registered trademark of PanaVise Products, Inc. Patent Pending. ©1992 by PanaVise Products, Inc.

Circle (56) on Fast Fact Card

With the new SLV40, what you see is less than what you get.



Actual size — 1.5" x 5.75" x 7"

Minimum Size, Maximum Punch!

What you see is the Mini-Com® Plus SLV40 from RELM Communications! It's the smallest, most compact mobile radio we've ever introduced.

But, what you get is a powerful, versatile radio that delivers all your basic communications needs with incredible ease of operation...all at the affordable price of only $482.00!*

What more do you get? Just look at some of the features that will help make the SLV40 one of your best selling radios:

- 40 Watts of power for a strong, far reaching signal.
- Two-Tone Sequential is built-in...not an additional option.
- CTCSS and DCS (standard & inverted) are built-in, too!
- Two controls for easy operation — no push buttons or squelch knobs.
- 6 channel capability with bright, easy-to-read LED channel indicators.
- Rugged die-cast construction and surface mount device technology for outstanding durability and performance.
- A full complement of options, including DTMF capability.
- **Now with a 2 year parts & labor warranty!**

But, what if your customers want more? Fine. RELM offers the RSP Series portable radios and the RM Series mobile radios which have enough power, channel capability and additional features to satisfy the most ravenous high tech, power hungry appetite. And, all RELM radios carry our same firm commitment to quality.

So, when you need radios, call RELM Communications, Inc.

We've got the equipment you need!



The complete Mini-Com® Plus lineup also includes the PT Series — PTV56 VHF and PTU46 UHF — portable radios and the SLU25* UHF mobile radio. These radios share the same features as the SLV40 and are available only from RELM Communications!*

RELM™
COMMUNICATIONS
7707 Records Street
Indianapolis, IN 46226
1-800-821-2900

Plus

AN ADAGE COMPANY

* Manufacturers suggested retail price. Your price may vary. PT Series not for sale pending FCC approval.

Circle (57) on Fast Fact Card

Magnavox/Nav-Com
9 Brandywine Drive
Deer Park, NY 11729
516-667-7710
Fax: 516-667-2235

Manon Engineering
515 Kirkland Way
Kirkland, WA 98033
206-827-7449; 800-426-9410
Fax: 206-827-7099

Marconi Instruments
3 Pearl Court
Allendale, NJ 07401
201-934-9050; 800-233-2955
Fax: 201-934-9050

Marden Electronics
P.O. Box 277
Burlington, WI 53105
414-763-6093; 800-222-6093
Fax: 800-252-9825

Marketronics
320 International Parkway
Sunrise, FL 33325
305-846-1011; 800-845-1230
Fax: 305-846-1672

Marting Franchise
P.O. Box 279
Monona, IA 52159
319-539-2670
Fax: 319-539-4271

Master Communications
8147 Pacos Court
Powell, OH 43065
614-792-7781

MaSys
435 Ford Road, Suite 465
Minneapolis, MN 55426
612-546-9556

Maxon America
10828 N.W. Airworld Drive, Suite 230
Kansas City, MO 64153
816-891-6320; 800-821-7848
Fax: 816-891-8815

Maxrad
2495 Pan Am Blvd.
Elk Grove, IL 60007
708-595-3933; 800-323-9122
Fax: 708-595-3951
Regional Sales Offices
CA, La Habra 310-690-8090
CO, Denver 303-758-3051
CT, Old Greenwich 203-637-4246
GA, Tucker 404-939-7075
IN, Indianapolis 317-849-8662
KS, Overland Park 913-381-1013
MN, Bloomington 612-884-7688
NH, Manchester 603-472-2297
TX, Tomball 713-351-7420
WA, Kirkland 206-827-7449
Canada, Woodbridge, Ont. 416-850-2550

MCG Electronics
12 Burt Drive
Deer Park, NY 11729
516-586-5125; 800-851-1508
Fax: 516-586-5120

MCM Electronics
650 Congress Park Drive
Centerville, OH 45459
513-434-0031; 800-543-4330
Fax: 513-434-6959

McManus Communications
400 N. Fifth St.
Blytheville, AR 72315
501-763-6250
Fax: 501-763-6533

Mech-Elec Systems
29958 Appaloosa Drive
Evergreen, CO 80439
303-674-1101; 800-933-1101

Mechem Electronics
P.O. Box 7846
Fredericksburg, VA 22404
703-373-3888

Meirick
420 S. Hickory
Mount Vernon, MO 65712
417-466-3941
Fax: 417-466-4207

Meridian Communications
P.O. Box 1158
Clifton, NJ 07014
201-473-1623; 800-631-7297
Fax: 201-473-1769

Meridian Communications
23501 Park Sorrento, Suite 213A
Calabasas, CA 91302-1355
818-888-7000
Fax: 818-888-2857

Metrocom Services
3530 38th St.
Long Island City, NY 11201
718-392-3300
Fax: 718-392-8629

METS
10585 N. Meridian St., Suite 200
Indianapolis, IN 46290
317-573-2200
Fax: 317-573-2220

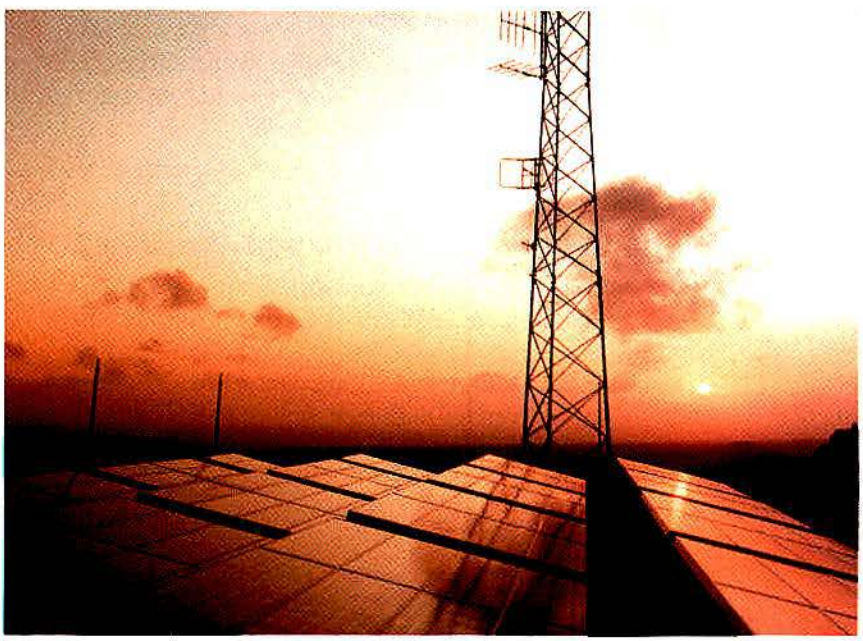
Stuart Meyer Consultant
2417 Newton St.
Vienna, VA 22181
703-281-3806
Fax: 703-281-3868

MFJ Enterprises
P.O. Box 494
Miss State, MS 39762
601-323-5869; 800-641-1800
Fax: 601-323-6551

Micro-Quick Systems
10384 Hillside Road
Alta Loma, CA 91701
714-980-1034; 800-874-7749
Fax: 714-944-3995

SIEMENS

Siemens and the sun. Dependable power, anywhere.



In telecommunications systems of every sort, from highway emergency-phones used only intermittently, to radio and television stations broadcasting all day—you'll find Siemens solar modules providing continuous, dependable power.

High-efficiency and field-proven performance have made Siemens M-Series modules the leading choice for solar powered telecommunications installations.

For quality photovoltaic products, backed by a company that can give you the support you need, anywhere in the world, make the intelligent choice. Insist on Siemens.

For complete information contact:

Siemens Solar Industries
P.O. Box 6032
Camarillo, CA 93011
Tel: 1-800/272-6765

Circle (58) on Fast Fact Card

Product Directory begins on page 14



WHEN LIVES ARE ON THE LINE, YOU CAN COUNT ON DICTAPHONE

The vehicle races to the scene – relying on information provided by your communications center.

Dictaphone Call-Check Digital Message Repeaters are an important part of that center. Helping operators verify critical information. Instantly locating and playing back calls with computerized accuracy. And providing all the additional features your operators need.

But the most important feature of all is the name. Dictaphone. It stands for made-in-America quality. And for a commitment to you that goes beyond product performance. Complete Satisfaction – Guaranteed – before, during and after the sale.

There's no job more important than saving lives. Dictaphone can help you do it better. You can count on it.

CUSTOMER SATISFACTION GUARANTEE



For more information, mail this coupon to Dictaphone Corporation, 3191 Broadbridge Ave., Stratford, CT 06497-2559.
Or call 1-800-447-7749, ext. D370.

Name _____ Title _____

Company _____ Phone _____

Address _____

City _____ State _____ Zip _____

Dictaphone

A Pitney Bowes Company

Circle (59) on Fast Fact Card

Microflect
P.O. Box 12985
Salem, OR 97309-0985
503-363-9267
Fax: 503-363-4613

Micrologg
20270 Goldenrod Lane
Germantown, MD 20876
301-428-3227; 800-333-6564
Fax: 301-540-5557

MicroNet Site Management
2370 York Road, Building B
Jamison, PA 18929
215-491-7400
Fax: 215-491-0260

Microwave Data Systems
300 Main St.
East Rochester, NY 14445
716-385-7560
Fax: 716-385-7923

Microwave Filter
6743 Kinne St. E.
Syracuse, NY 13057
315-437-3953; 800-448-1666
Fax: 315-463-1467

Microwave Networks
10795 Rockley Road
Houston, TX 77099
713-495-7123; 800-749-2577
Fax: 713-879-4728

Midian Electronics
2302 E. 22nd
Tucson, AZ 85713
602-884-7981; 800-643-4247
Fax: 602-884-0422

Midland Land Mobile Radio
1690 N. Topping Ave.
Kansas City, MO 64120
816-241-8500; 800-MID-LAND
Fax: 816-245-1144

Millidyne
3645 Trust Drive
Raleigh, NC 27604
919-876-6413; 800-743-0301
Fax: 919-876-6492

Minilec Service
9321 Eton Ave.
Chatsworth, CA 91311
818-998-0826; 800-222-6075
Fax: 818-341-5355

Mitsubishi Electronics America
800 Biermann Court
Mount Prospect, IL 60056
708-298-9223
Fax: 708-824-7221

Mitsubishi International
1500 Michael Drive, Suite B
Wood Dale, IL 60191
708-860-4200
Fax: 708-860-8398

Mobile Communications Consulting
13017 Chestnut Oak Drive
Gaithersburg, MD 20878
301-926-2837
Fax: 301-926-2506

Mobile Data Communications
10850 N. 24th Ave., Suite 101
Phoenix, AZ 85029
602-678-3788
Fax: 602-678-4471

Mobile Data Specialists
14715 Brookside Forest
Houston, TX 77040
713-466-4609

Mobile Installers Products
P.O. Box 466
North Hollywood, CA 91603
800-544-1204 USA; 800-654-1205 CA
Fax: 818-505-0890

Mobile Mark
3900-B River Road
Schiller Park, IL 60176
708-671-6690; 800-648-2800
Fax: 708-671-6715

Mobile Training Institute (MTI)
P.O. Box 8278
Lumberton, TX 77711-0278
409-755-7838
Fax: 409-755-7810

MobileComm
1800 E. County Line Road, Suite 300
Ridgeland, MS 39157
601-977-1648
Fax: 601-977-1779

Mobility
558-A Columbus Ave.
San Francisco, CA 94133
415-291-0939
Fax: 415-291-8540

Mod-Tek
P.O. Box 459
Rock Falls, IL 61071
815-625-5954
Fax: 815-625-4980

Modems Plus
3097-A Presidential Drive
Atlanta, GA 30340
404-458-2232
Fax: 404-452-1641

Modublox & Company
2167 Calle Guaymas
La Jolla, CA 92037
619-456-0016; 800-525-2283
Fax: 619-456-2039

Modular Communications Systems
13309 Saticoy St.
North Hollywood, CA 91605
818-764-1333

Monicor Electronics
2964 N.W. 60th St.
Fort Lauderdale, FL 33309
305-979-1907
Fax: 305-979-2611

Monroe Electronics
100 Housel Ave.
Lyndonville, NY 14098
716-765-2254; 800-821-6001
Fax: 716-765-9330

Morcom International
5130 Duke St., Suite 6
Alexandria, VA 22304
703-750-3414
Fax: 703-354-8843

Moseley
111 Castilian Drive
Goleta, CA 93117
805-968-9621
Fax: 805-685-9638

Moss Communications
13654 N. 12th St., Suite 4
Tampa, FL 33613
813-977-4777; 800-767-1963
Fax: 813-975-0022

Motorola Cellular Subscriber Group
600 N. US Highway 45, Room AN482
Libertyville, IL 60048
800-331-6456

Motorola Inc.
P.O. Box 1417
Scottsdale, AZ 85252-1417
602-441-3192
Fax: 602-441-6702

Motorola Land Mobile Products Sector
1301 E. Algonquin Road
Schaumburg, IL 60196
708-576-1000

Product Directory begins on page 14

AIR BAGS WILL CHANGE THE WAY YOU MOUNT YOUR EQUIPMENT.

AIR BAG FRIENDLY™

MOUNTS for your mobile communications equipment

Federal Motor Vehicle Safety Standard #208 will require both driver and passenger side air bags in new passenger cars beginning Aug. 31, 1993.

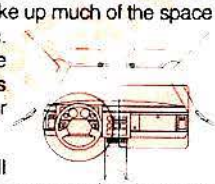
Look for our Air Bag Friendly logo for existing and newly designed mounts that meet the standards as they are released.

If you are currently using Gamber-Johnson DS-Series or No Holes Bored mounts, transition for most models to the Air Bag Friendly mounts will be easy and cost effective. No need to start over with a new mount!

To receive literature on our current Air Bag Friendly mounts, and to keep informed as the air bag/mounting issue progresses, call or FAX toll-free.

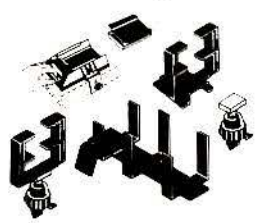
Phone: 1-800-GJ-MOUNT (1-800-456-6868)
FAX: 1-800-WE-HELP (1-800-934-3577)

Passenger side bags, when deployed, will take up much of the space now used for mounting MDT's, radios, etc. Since no obstructions are allowed in the air bag deployment zone, this leaves extremely limited space for mounting your mobile communications equipment.



Final equipment mounting zones are still to be defined. As these equipment mounting constraints become defined, Gamber-Johnson will have additional mounting solutions available.

However, many of our present mounts already meet the expected mounting space constraints. Super Slide™, ShortStack™, StackAbout™, Floor-Master™, and Message Mount™, when properly mounted, will fall within the permissible zones as tentatively defined.



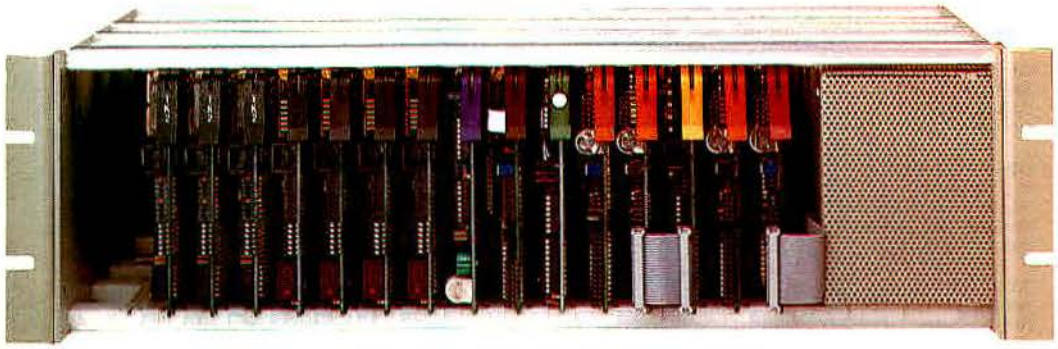
DESIGNED AND MADE IN U.S.A.

GAMBER-JOHNSON
Service & Solutions™
801 Francis Street, Stevens Point, Wisconsin 54481

Circle (60) on Fast Fact Card

Are you going to buy a radio paging terminal this year?

Sheer Genius



Why you should consider the feature-rich Unipage.

Modular chassis architecture makes growth painless.

Start with the size system that you need and add to it as your business grows. To expand your system, just add cards, chassis and frames as they are needed. You will never outgrow your system because Unipage is modular.

System capacities up to:

- 2 Million subscribers
- 1920 Trunks
- 120 Recorders
- 120 Voice buffers
- 600 Hours voice storage
- 128 Channels
- 256 Alpha ports
- 1000 Alpha character messages

Trust Unipage with your paging needs. Four of the five nationwide paging companies do.

Unipage makes paging easy and convenient for you.

- AcceptsPulse, DTMF, and MF signalling
- Pages in all popular formats, including POCSAG (2400, 1200 and 512), GOLAY, 2 Tone, 5 Tone, NEC D3, NCA, MBS, and RDS
- Alpha, numeric, tone, or voice paging
- Power—117 Volts AC, 220 Volts AC, or 48 Volts DC
- Standard 19 Inch Rack Mount Chassis. Free standing cabinets are included with some models
- Secure remote access and restricted programming
- Remote and local diagnostics and statistics
- Hot Maintenance—Remove or install cards while the system is operational
- Full or critical sub-system redundancy options
- Warranty—2 years standard with additional 3 year warranty optional

System features that will set you apart from the competition:

- Voice Prompts—Generic system prompts or per subscriber custom prompts
- Networking Capability—TNPP via leased-line, satellite or dial-up
- Message Manager—Voice and numeric retrieval
- Alpha Transcription—Alpha dispatch from voice messages stored in a subscriber's mail box

If you're considering a paging system, we'd like to tell you more about our products and services. Just give us a call today. Don't settle for less than the best.

unipage®
A Motorola Company

1509 Falcon
DeSoto, Texas 75115
(214) 224-3509
1-800-367-2864
FAX (214) 228-1430

Circle (61) on Fast Fact Card

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Mountain Communications
399 Route 10 E.
East Hanover, NJ 07936
201-884-4100; 800-874-6631

Mouser Electronics
2401 Highway 287 N.
Mansfield, TX 76063
817-483-4422; 800-346-6873
Fax: 817-483-0931

Multicom
2608 N. Moore Ave.
Moore, OK 73160
405-799-7356; 800-798-5842

Multiplier Industries
P.O. Box 630
Mount Kisco, NY 10549
914-241-9510; 800-642-2424
Fax: 914-241-1103

MX-COM
4800 Bethania Station Road
Winston-Salem, NC 27105
919-744-5050; 800-638-5577
Fax: 919-744-5054

...N...

Nady Systems
6701 Bay St.
Emeryville, CA 94608
510-652-2411
Fax: 510-652-5075

National Association of Business & Educational Radio (NABER)
1501 Duke St.
Alexandria, VA 22314
703-739-0300; 800-759-0300
Fax: 703-836-1608

National Custom Enterprises
400 Gateway Blvd.
Burnsville, MN 55337
612-890-1360; 800-328-3773
Fax: 612-890-1014

National Pager Service
131 Chesterfield Industrial
St. Louis, MO 63005
314-532-4226
Fax: 314-532-5221

National Radio
11402 Mortimer
Houston, TX 77066
713-537-5555; 800-548-2222
Fax: 713-580-1993

Navigation Data Systems
P.O. Box 23850
New Orleans, LA 70183
504-734-5566
Fax: 504-734-5081

NEC America Mobile Radio Div.
383 Omni Drive
Richardson, TX 75080
214-907-4000; 800-421-2141
Fax: 214-907-4563

Nemal Electronics International
12240 N.E. 14th Ave.
North Miami, FL 33161
305-899-0900; 800-522-2253
Fax: 305-895-8178

Neutec
30085 Comercio Rancho
Santa Margarita, CA 92688
714-858-4419
Fax: 714-858-5125

New Eagle Communications
201 Railroad St.
Silver Lake, KS 66539
913-582-5823; 800-541-4792
Fax: 913-582-5820

New London Technology
231 Old Timberlake Road
Forest, VA 24551
804-525-0068
Fax: 804-525-0078

MM Newman Corporation Antex Div.
P.O. Box 615
Marblehead, MA 01945-0615
617-631-7100
Fax: 617-631-8887

Newmar
P.O. Box 1306
Newport Beach, CA 92663
714-751-0488; 800-854-3906
Fax: 714-957-1621

Newton Instrument
P.O. Box 727
Butner, NC 27509-0727
919-575-6426
Fax: 919-575-4708

NKX
1814 Hancock St.
Gretna, LA 70053
504-361-5525

Nokia Mobile Phones
2300 Tall Pines Drive, Suite 120
Largo, FL 34649-2930
813-536-5553; 800-666-5553
Fax: 813-530-3599

Norand
550 Second St. S.E.
Cedar Rapids, IA 52401
319-369-3100; 800-452-2757
Fax: 319-369-3453

NorComm
12438 Loma Rica Drive
Grass Valley, CA 95945
916-477-8400; 800-874-8663
Fax: 916-477-8403

Northern Controls & Communications
1035 Blair Road
Fairbanks, AK 99701
907-452-7765
Fax: 907-456-5175

Northern Power Systems
One North Wind Road
Moretown, VT 05660
802-496-2955
Fax: 802-496-2953

Northern Technologies
23123 E. Mission
Liberty Lake, WA 99019
509-927-0401; 800-727-9119
Fax: 509-927-0435

Norton Engineering
10002 McDuff Court
Vienna, VA 22181
703-938-5745
Fax: 703-938-9168

NS Electronics Service
3610 Dekalb Tech Parkway,
Suite 110/111
Atlanta, GA 30340
404-451-3264
Fax: 404-458-8785

NSI Systems
E49 Midland Ave.
Paramus, NJ 07652
201-261-8797
Fax: 201-261-8339

Product Directory begins on page 14

NEWS UPDATE:

"NEW" Product by CTI!

SX-96 Multi-Port Trunk Controller

CTI's enhanced multi-port trunk controller with 8 to 32 DID Trunks, Channel Ports, and DOD Lines.

- **Solid State 96 Port Non-Blocking Digital Matrix Switching System**
- **Up to 32 DID Inputs**
- **Up to 32 SMR Channel Outputs**
- **Up to 32 DOD Outputs**
- **Advanced 16 Bit Microprocessor**
- **1500 Subscriber Capacity — Expandable to over 4,000**
- **DTMF, MF, or Pulse Dialing on DID Circuits**
- **Programmable by CRT or PC**
- **Call Progress Tones On All Trunks — Ring, Busy, and Reorder**
- **System Diagnostics**
- **Active Switching Matrix Minimizes Insertion Loss from Input Trunks to Outputs**
- **Data Base Back-Up Via PC**
- **2, 3, or 4 Digits Input and Up to 30 Digits Output (Programmable)**
- **Random Subscriber Programming (Any Number Input to Any Number Output)**
- **Call Forwarding**
- **Voice Prompts**
- **Card Cage Construction with Individual Line Modules for Easy Maintenance**

CTI Inc.

P. O. BOX 780 — CORINTH, MISSISSIPPI 38834
(601) 287-8081 — FAX 601-287-9427
SALES 800-752-3646

Circle (62) on Fast Fact Card



High Profile Revenue Generator by

WESTERN TOWERS

Custom Built Towers for Land Mobile, Microwave, Broadcast, CATV, Wireless Cable.

- **48 Top Mount Antenna Positions**
- **920 Square Foot Top Platform**
- **Self Supporting Guyed Towers, Monopoles**

◄ Model 9600 WHTG
Tinton Falls, NJ

WESTERN TOWERS
324 W. 26th Street
San Angelo, TX 76903
1-800-622-6539

Circle (63) on Fast Fact Card

Standard's HX580T:

Two Trunking Formats Plus 800 MHz Conventional!



Three Times The Radio, Three Times The Features, Three Times The Value

Standard's new HX580T offers the best of both trunking systems in a feature-packed portable fully compatible with either EFJ LTR® or Motorola Privacy Plus® trunking formats.

It can even operate as a conventional 109-channel 800 MHz radio, supporting talkaround channels.

All with field programmability, high-speed priority scanning, graphic battery level display, two watt output, programmable DTMF, DCS, ANI & CTCSS, internal self test, and a Mil Spec rating.

The industry's best trunking handheld, delivered with the industry's best warranty: three year's parts and labor.

Count on Standard to deliver.

A Privacy Plus® Trunking Handheld

Fully compatible, with a full complement of convenient features:
Group Select, Subfleet Call, Fleet Call Encode, Fleet Call Decode, Call Alert, 5 Channel Restriction, Multiple Control Channels, Busy Scan Hold, Floating System, Quick Access and more!

An LTR® Trunking Handheld

Packed with features to maximize trunking convenience:
Group Select, Block Decode, Block Decode Timer, Block Transmit Inhibit, Floating System Auto-Transmit, LTR® Talkaround, and more!

A Conventional 800 MHz Handheld

Loaded with unique features:
Group Select, Squelch Tail Elimination, CTCSS/DCS Lockout Talkaround, Monitor/Volume Set, DTMF ANI, Phone Interconnect Encode, Busy Lockout etc.

Standard Communications

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...O...

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Fax: 603-425-2253

OKI telecom
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Fax: 404-822-0737

Oklahoma Radio Systems
ORS Paging
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Moore, OK 73160
405-799-7099
Fax: 405-799-2626

Omni-Gain Land Mobile Antennas
132 N. Main
Union, OH 45322
800-328-5922

Omnicom
930 Thomasville Road, Suite 200
Tallahassee, FL 32303
904-224-4451

Omnicron Electronics
581 Liberty Highway
Putnam, CT 06260
203-928-0377
Fax: 203-928-6477

Omnivoice
P.O. Box 830
Warren, OH 44482
216-393-3246
Fax: 216-394-5742

Oneac
27944 N. Bradley Road
Libertyville, IL 60048
708-816-6000; 800-327-8801
Fax: 708-680-5124

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Fort Lauderdale, FL 33334
305-771-2050; 800-327-5912
Fax: 305-771-2052

ORA Electronics
9410 Owensmouth Ave.
Chatsworth, CA 91311
818-772-2700; 800-431-8124
Fax: 818-718-8626

Orbacom Systems
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Fax: 609-829-6980
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TX, Corsicana 903-872-8306

...P...

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301-490-9860
Fax: 301-498-3252

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Costa Mesa, CA 92626
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Fax: 714-662-5948

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201-943-9521
Fax: 201-943-0233

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Fax: 919-876-5666

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713-991-4930; 800-628-3910
Fax: 713-991-4948

Palomar Engineers
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619-747-3343
Fax: 619-747-3346

Palomar Telecom
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Escondido, CA 92029
619-746-7998
Fax: 619-746-1610

Panasonic Communications Systems
Two Panasonic Way, 7B-3
Secaucus, NJ 07094
800-441-PANA

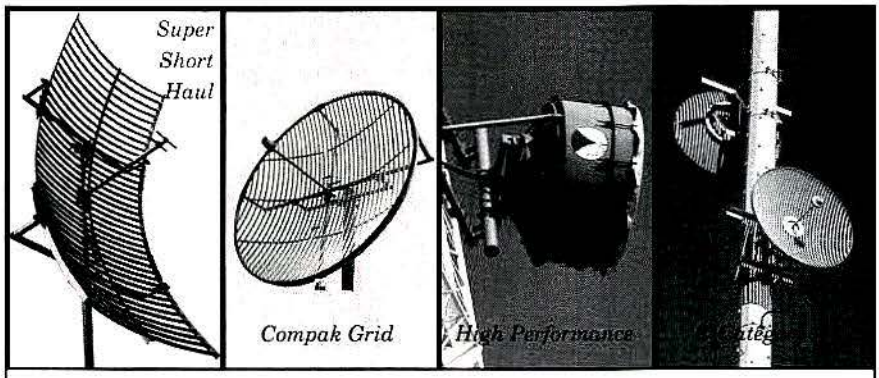
PanaVise Products
1485 Southern Way
Sparks, NV 89431
702-353-2900
Fax: 702-353-2929

Paragon Engineering
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Fax: 806-894-7067

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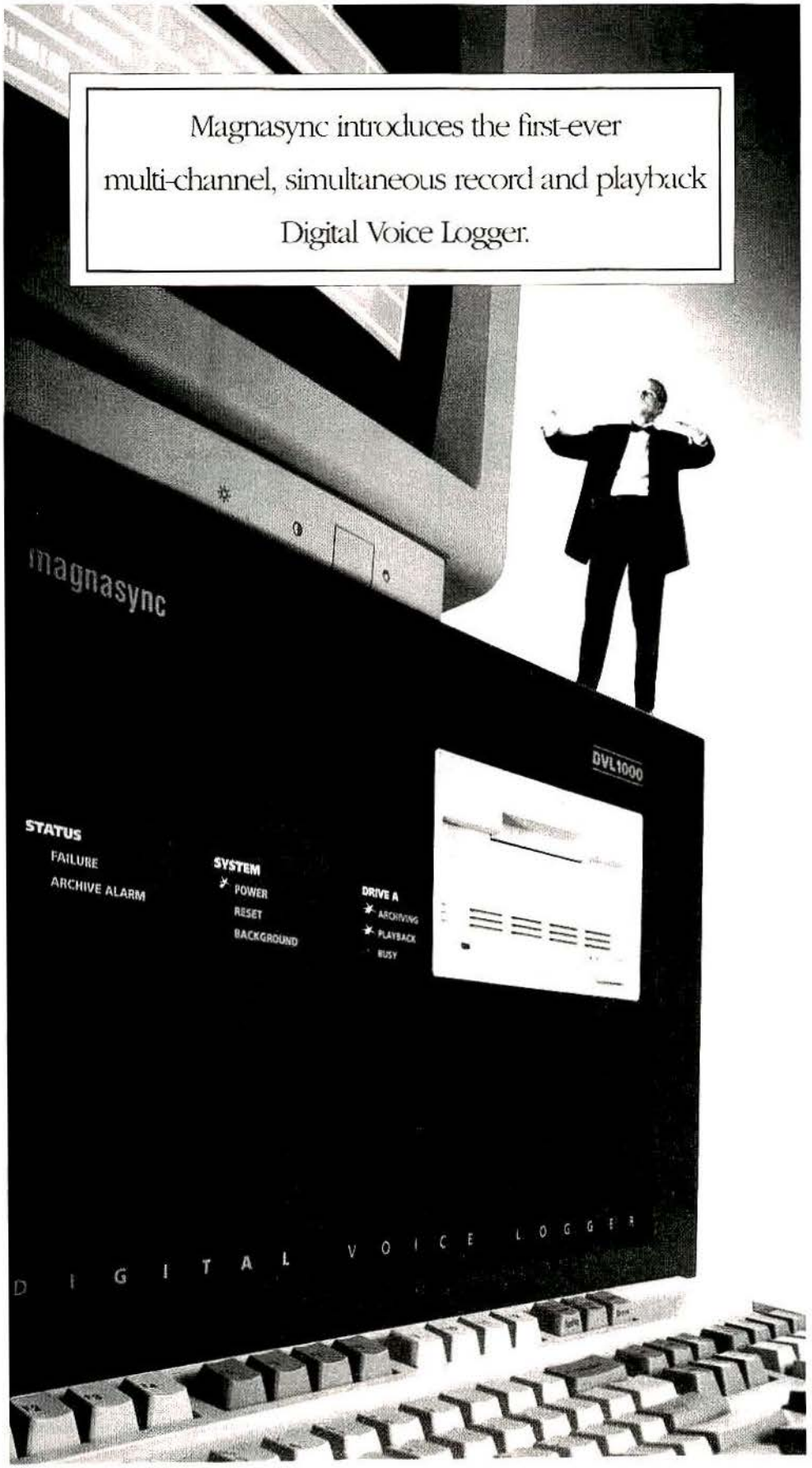
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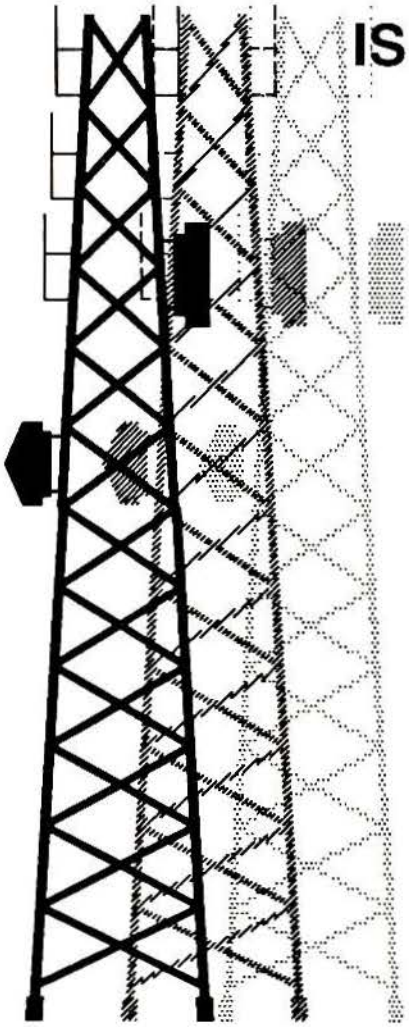
1135 Mansfield Avenue
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201-772-0704

Peacocks Radio & Wilds Computer Services
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West Memphis, AR 72301
501-735-7751
Fax: 501-735-7799

Peninsula Engineering
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415-593-2400
Fax: 415-591-1624

Penta
1536 Sams Ave.
New Orleans, LA 70123
504-733-1700
Fax: 504-734-5041

Periphex
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203-264-3985; 800-634-8132
Fax: 203-262-6943

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Canada M5R 3J8
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Fax: 416-968-7931

Photocomm Industrial Div.
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303-988-8208
Fax: 303-988-9581
Regional Sales Offices
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PR, Culebra 809-742-0221
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Pipo Communications
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916-644-5444
Fax: 916-644-PIPO

PiRod
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PMC Associates
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Somerset, NJ 08873
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Fax: 908-563-9174

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Fax: 702-782-4476
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206-928-0000; 800-562-0036
Fax: 206-471-0266

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804-239-3049

The Portable Depot
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Lynchburg, VA 24501
804-237-3427
Fax: 804-237-3459

Portable Technical Services
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Lynchburg, VA 24502
804-239-3049

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583-G Pondella Road
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Fax: 813-995-3933

Positron Industries
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GA, Atlanta 404-994-3920
IL, Chicago 312-399-9278
NY, New York 212-797-1300
TX, Houston 713-376-1996

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Tucson, AZ 85704
602-297-2184; 800-727-6824
Fax: 602-327-5300

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815-459-9100; 800-447-3484
Fax: 815-459-9118

Power-Sonic
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Redwood City, CA 94063
415-364-5001
Fax: 415-366-3662

Powerline
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Niagara-On-The-Lake, Ont.
Canada L0S 1J0
800-263-4938
Fax: 416-646-2746

Preston Communications
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Spring Valley, NY 10977
914-354-6285
Fax: 914-354-7638

Primus Electronics
18424 S. I-55 W. Frontage Road
Joliet, IL 60435
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Fax: 612-645-3511

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Fax: 708-432-9181

R/M Wholesale Communications
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317-844-3866; 800-837-5532
Fax: 317-843-4495

Racom Products
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Fax: 216-351-0392

RaCoTek
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612-895-8787
Fax: 612-895-9086

Radiation Systems, Mark Antennas Div.
P.O. Box 1548
Des Plaines, IL 60017
708-298-9420
Fax: 708-635-7946
Regional Sales Offices
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FL, Wemsdale 904-821-4053
NJ, Freehold 908-409-6290

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Centreville, VA 22020
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Radio Systems
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Fort Lauderdale, FL 33312-5068
305-587-9135
Fax: 305-587-6738

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Columbus, GA 31906
404-561-7000; 800-53-RADIO
Fax: 404-568-4506

RadioMate
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Concord, CA 94527
415-680-4212; 800-828-4212
Fax: 415-676-3387

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Woodbridge, NJ 07095
908-636-6970; 800-247-4796
Fax: 908-636-7260

RAM Mobile Data
One Rockefeller Plaza, Suite 1600
New York, NY 10020
212-373-1930
Fax: 212-373-1938

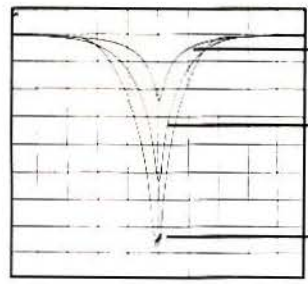
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TUNABLE NOTCH FILTER

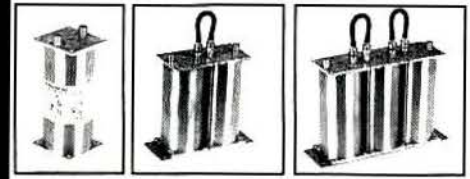
The 6367 series comprises 6 separate tunable notch filters, each of which covers an approximately 2:1 frequency range with adjustable 3 db bandwidth. A coaxial or helical resonator is tuned with high Q air trimmers to produce a relatively deep notch at narrow bandwidth. Available for tuning ranges of:

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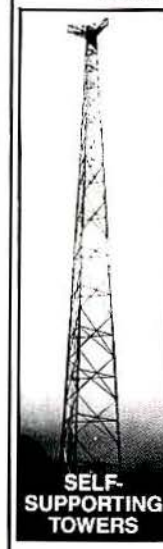
Response of Single, Double and Triple Cavity assemblies adjusted to the same 3 dB bandwidth.



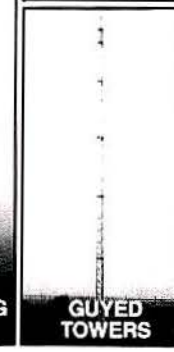
MICROWAVE FILTER COMPANY, INC.
6743 Kinne St. • E. Syracuse, NY 13057
800-448-1666 • 315-437-3953
FAX: 315-463-1467 • Telex: 249-613

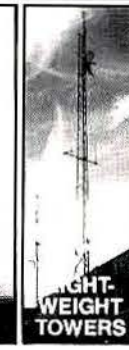
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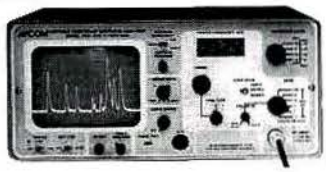
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Fax: 619-259-0437

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Azle, TX 76020
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Fax: 817-444-0704

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Sparks, NV 89431
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Fax: 702-355-1121

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Springfield, MO 65807
417-887-4663
Fax: 417-887-1434

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214-580-1911
Fax: 214-580-0641

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Fax: 308-324-4985

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Fax: 516-939-6189

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Fax: 407-856-1960

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Fax: 219-848-5333

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Fax: 615-528-7854

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RF Products
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Fax: 407-631-0775

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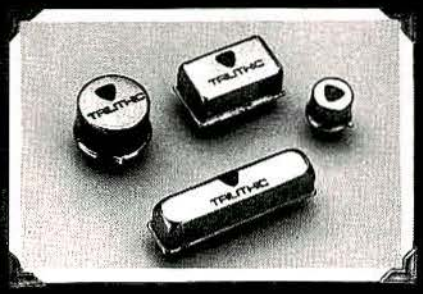
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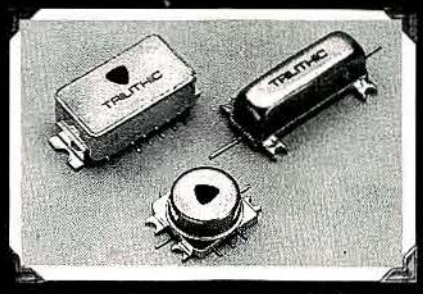
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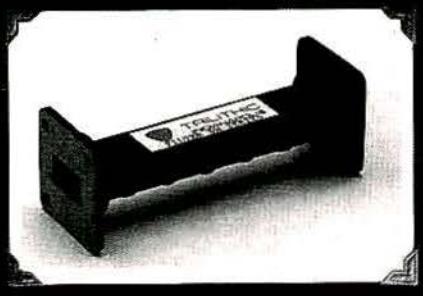
Miniature filters



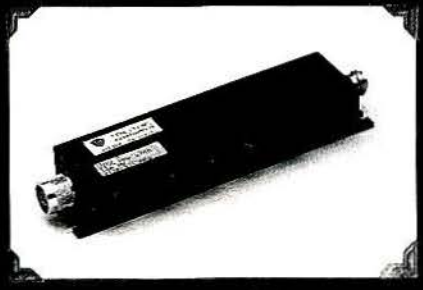
Surface mount filters



Tubular filters



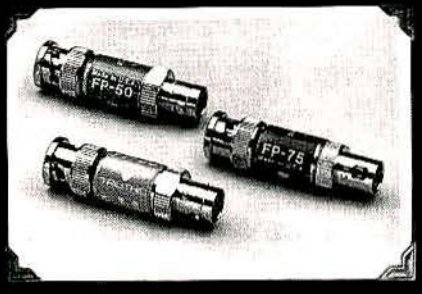
Waveguide filters



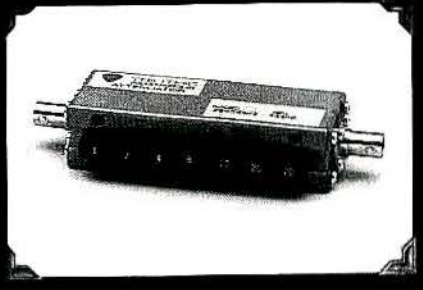
Cavity filters



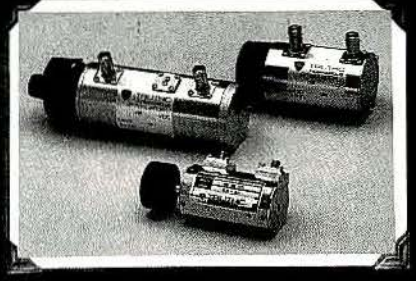
Tunable filters



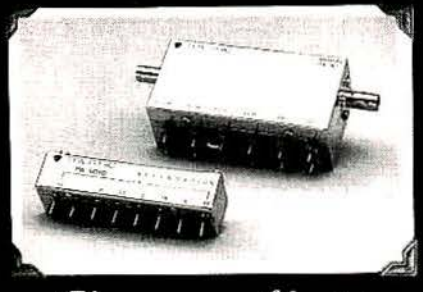
Coaxial attenuators



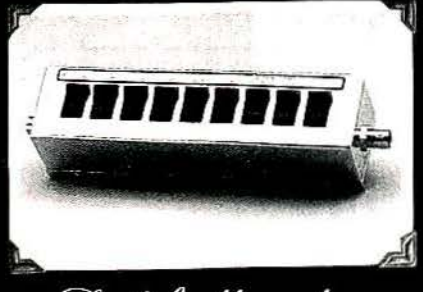
Pushbutton attenuators



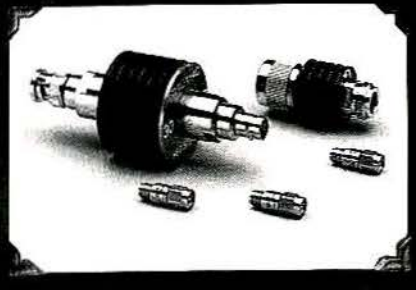
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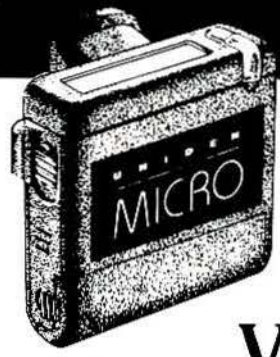
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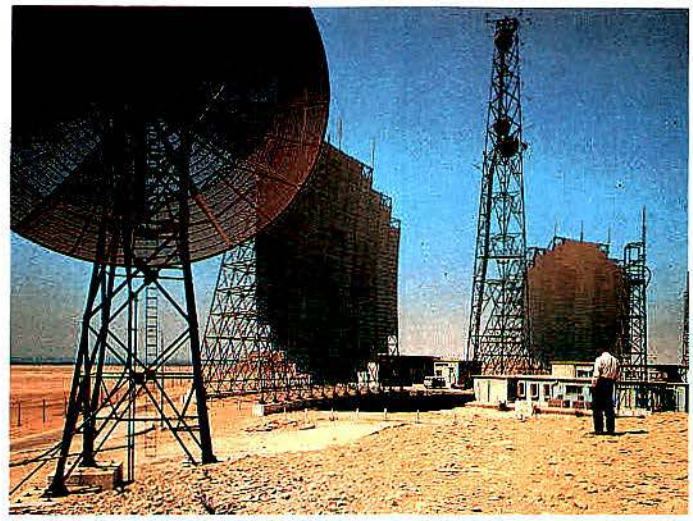
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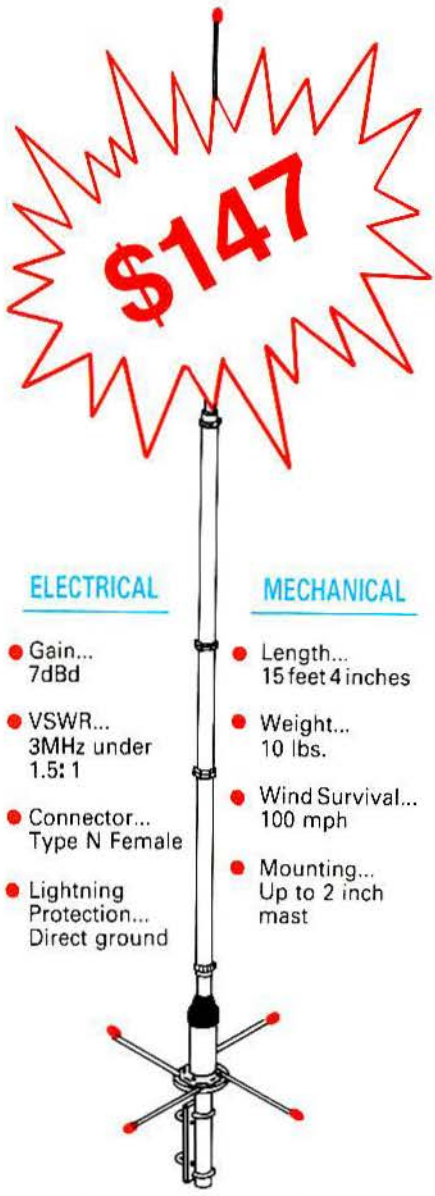
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St. Louis, MO 63132
314-426-7662
Fax: 314-426-1357

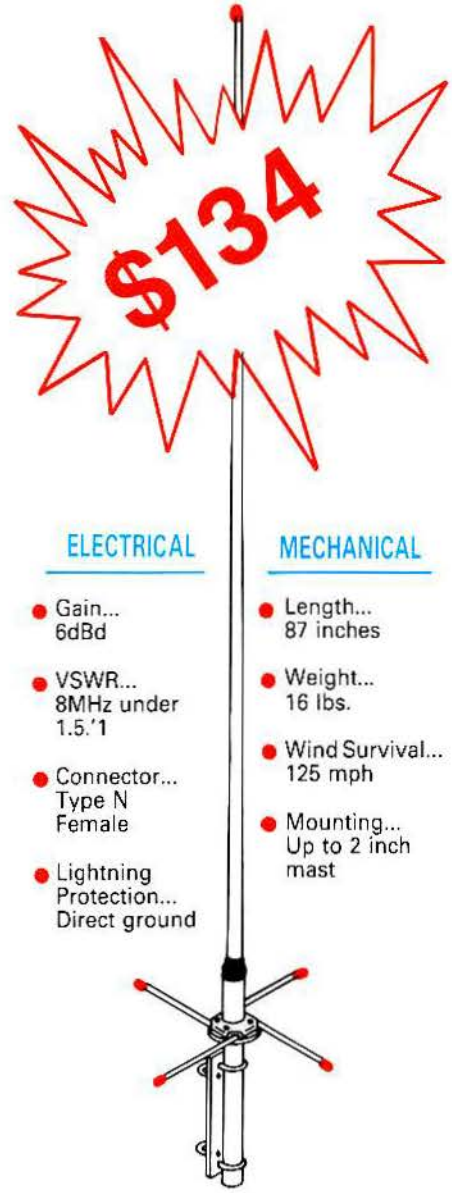
Teletec
P.O. Box 20405
Raleigh, NC 27619
919-556-7800
Fax: 919-556-6180

Teletech
P.O. Box 924
Dearborn, MI 48121
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415-968-4400; 800-331-3396
Fax: 415-968-1741

Telewave
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Port Moody, BC
Canada V3H 1Z4
604-939-8315
Fax: 604-939-0544

Telex Communications
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Minneapolis, MN 55420
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Fax: 612-884-0043

Telular
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Wilmette, IL 60019
708-256-8000
Fax: 708-256-3555

Temex Electronics
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Glendale, AZ 85301
602-842-0159
Fax: 602-939-6830

Tessco
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Sparks, MD 21152-5100
410-472-7000; 800-472-7373
Fax: 410-472-7575

TGA Systems
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Norcross, GA 30071-1429
404-441-2100; 800-998-8421
Fax: 800-842-3906

Frank Thatcher Associates
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415-956-6118
Fax: 415-956-3228

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516-288-8228; 800-441-5188
Fax: 516-288-5788

TorFino Enterprises
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Lake Worth, FL 33466-6888
407-790-0111
Fax: 407-790-0080

Tower Structures
1869 Nirvana Ave.
Chula Vista, CA 91911
619-421-1181
Fax: 619-421-0533

Tower Systems
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Watertown, SD 57201
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Fax: 605-886-0932

Tower Technology
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Oldsmar, FL 34677
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Fax: 813-855-1969

Townsend Electronics
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Pierceton, IN 46562
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Fax: 219-594-5580

TPL Communications
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213-256-3000; 800-447-6937
Fax: 213-254-3210

Trans-Tech
5520 Adamstown Road
Adamstown, MD 21710
301-695-9400
Fax: 301-695-7065

Transcrypt International
1620 N. 20th St.
Lincoln, NE 68503
402-435-4400; 800-228-0226
Fax: 402-435-6780

Transworld
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Escondido, CA 92029
619-747-1079
Fax: 619-741-1658

Trident Micro Systems
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Fountain Valley, CA 92708
714-549-5206; 800-798-7881
Fax: 714-549-2129

Trilithic
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Indianapolis, IN 46236
317-895-3600; 800-344-2412
Fax: 317-895-3613

Tripp Lite
500 N. Orleans
Chicago, IL 60610-4188
312-329-1777
Fax: 312-644-6505

Triton Electronics
4300 Lincoln Ave., Unit O
Rolling Meadows, IL 60008
708-934-6426
Fax: 708-934-7195

Trylon Manufacturing
P.O. Box 186
Elmira, Ont.
Canada N3B 2Z6
519-669-5421
Fax: 519-669-8912

TSR Technologies
P.O. Box 10727
Blacksburg, VA 24062-0727
703-552-8324
Fax: 703-552-TECH

TTI
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Milpitas, CA 95035
408-945-1700
Fax: 408-945-7904

TWR Communications
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Houston, TX 77255
713-973-6904
Fax: 713-973-0205

TWR Lighting
1630 Elmview
Houston, TX 77080
713-973-6904
Fax: 713-973-0205

TWR Telecom
P.O. Box 55606
Houston, TX 77255
713-973-6904
Fax: 713-973-0205

TX RX Systems
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Angola, NY 14006
716-549-4700
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Fax: 206-671-5022

Uniden Corporation of America
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Fort Worth, TX 76155
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NY, No. Massepequa 516-756-9580
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Natcom, MS, Jackson 601-352-4183
VCP International:
TX, Garland 800-527-9366

Union Electronic Distributors
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South Holland, IL 60473
708-333-4100; 800-648-6657
Fax: 800-438-6466

Unipage
1509 Falcon St.
DeSoto, TX 75115
214-224-3509, 800-367-2864
Fax: 214-228-1430
Regional Sales Offices
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CT, Bristol 203-583-8809

Unita Communications
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Evanston, WY 82930
307-789-2058
Fax: 307-789-6857

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Fax: 602-991-8860

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Fax: 414-252-4721

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Fax: 405-947-8466

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Fax: 402-359-5106
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MD, Hunt Valley 301-628-9300
MA, East Weymouth 617-331-4880
MN, Stillwater 612-430-1572
NJ, Totowa 201-256-0455
NY, Syracuse 315-437-8387
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WI, Hartland 414-367-2929

Vanner
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Fax: 614-771-4904

Vansco Electronics
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Fax: 204-452-7156

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Fax: 214-278-5981

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413 Oak Place, Suite 3M
Port Orange, FL 32127
904-756-9770; 800-767-9771
Fax: 904-756-9733

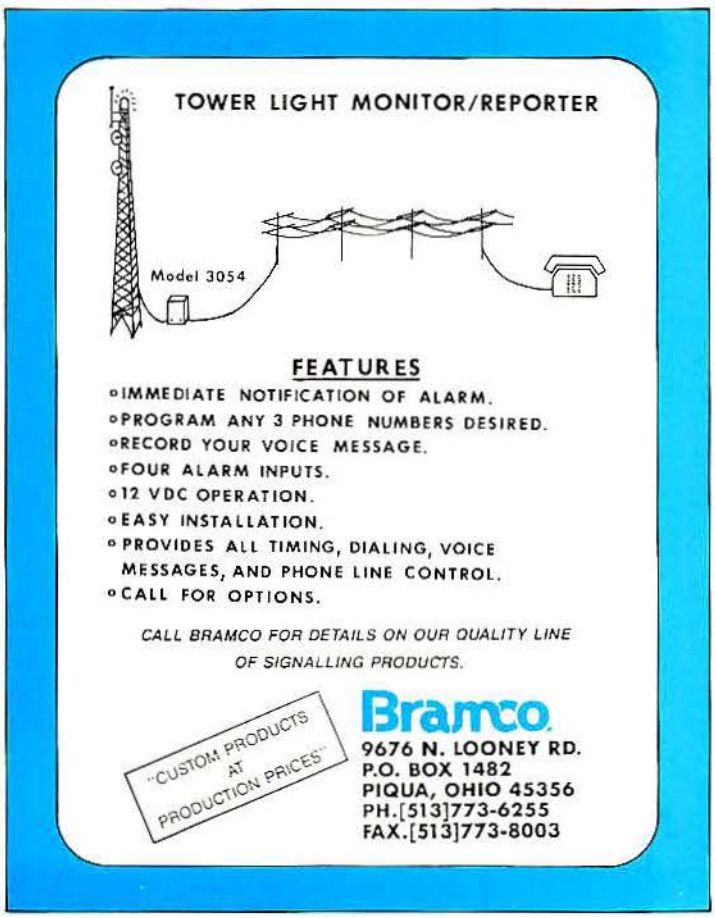
Vega
9900 Baldwin Place
El Monte, CA 91731-2204
818-442-0782; 800-877-1771
Fax: 818-444-1342
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FL, Jupiter 407-575-9964
GA, Atlanta 404-452-1224
LA, Houma 504-868-7629
MD, Silver Spring 301-384-0700
MO, Cameron 816-632-7616
NH, Manchester 603-472-2297
NJ, Somerset 908-563-0366
NC, Knightdale 919-217-1626
OH, Fairfield 513-874-3232
OK, Eufaula 918-689-9127
TX, Rowlett 214-475-1179
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WI, Hartland 414-367-2929

VersaTel Communications
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Fax: 307-266-3010

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Fax: 703-981-0613

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Canada B4B 1G6
902-835-5551
Fax: 902-835-4555

VLR Communications
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Arlington Heights, IL 60004
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Fax: 708-255-5770

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Schaumburg, IL 60193
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Fax: 708-924-9078

Voice of the Road
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603-335-2024
Fax: 603-332-3200

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714-687-2492
Fax: 714-687-2513

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Washington Information Group
P.O. Box 19352, 20th St. Station
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202-463-7323
Fax: 202-463-8633

Wavetek Communications Div.
5808 Churchman Bypass
Indianapolis, IN 46203-6109
317-788-9351; 800-245-6356
Fax: 317-782-4607

Webster Communications
115 Bellarmine
Rochester, MI 48309
313-375-0420; 800-521-2333
Fax: 313-375-0121

Western Multiplex
310 Harbor Blvd.
Belmont, CA 94002
415-592-8832
Fax: 415-592-4249

Western Towers
324 W. 26th St.
San Angelo, TX 76903
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Whelen Engineering
Route 145, Winthrop Road
Chester, CT 06412-0684
203-526-9504
Fax: 203-526-4078

Brian R. White Company
313 Henry Station Road
Ukiah, CA 95482
707-462-9795
Fax: 707-462-4800

Wholesale Cellular USA
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Indianapolis, IN 46278
317-297-6100; 800-243-1227
Fax: 317-297-6114

Wi-Comm Electronics
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Massena, NY 13662
315-769-8334

Wilcom
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Laconia, NH 03247
800-222-1898
Fax: 603-528-3804

Willmar Technical College
P.O. Box 1097
Willmar, MN 56201
612-235-5114
Fax: 612-235-5114

Wilmore Electronics
P.O. Box 1329
Hillsborough, NC 27278
919-732-9351
Fax: 919-732-9359

Wiltron
490 Jarvis Drive
Morgan Hill, CA 95037-2809
408-778-2000
Fax: 408-778-0630

Wisco International
690 W. 28th St.
Hialeah, FL 33010-1293
305-888-1677
Fax: 305-887-1624

C. W. Wolfe Communications
1113 Central Ave.
Billings, MT 59102
406-252-9220
Fax: 406-252-9617

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Zebryk Engineering
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Southbridge, MA 01550
508-764-3855
Fax: 508-764-3716

Zetron
12335 134th Court N.E.
Redmond, WA 98052
206-820-6363
Fax: 206-820-7031

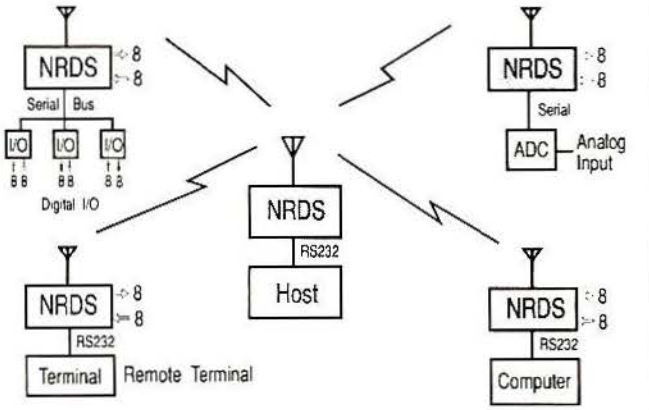
Zirco
10900 W. 44th Ave.
Wheat Ridge, CO 80033
303-421-2013
Fax: 303-423-8346

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Santa Clara, CA 95051
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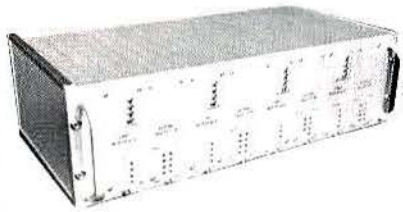
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ACTIVELINK—db Mobile
AEROGLAS—Decibel Products
ALL-POINTS—Lynn-Arthur Associates
ALPHA-1—The Antenna Company
ALPHABOX—Teknow
ALPHASENSE—Compuquest
ANET—LCC
AQUAMARINE—Decibel Products
ASTROLITE—Television Equipment Associates
ATLAS—The Antenna Company
ATLAS SOUND—Atlas/Soundolier
AUTO-CONNECT—Bramco

... B-C...

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BOSS—Photocomm
BRIGHTER IDEA STROBES—Broadcast Communications Systems
C$ERVICE—Sage Data Systems
CAESAR—DMC Caesar Software
CALL CHECK—Dictaphone
CARBON COPY—MobileComm
CARBON COPY PLUS—MobileComm
CEL-GATOR—Modublox
CELLCAD—LCC
CELLDYNE—Tessco
CELL MASTER—Les Wallen USA
CELLINK—db Mobile
CELLMAX—LCC
CELLSCOPE—TSR Technologies
CELLSIGHT—LCC
CELLSPAN—LCC
CELLSTAR—Sage Instruments
CELLTRAC—LCC
CELLUMATE—LCC
CEL-PROBE—Modublox
CFC—Decibel Products
CHALLENGER—E.F. Johnson
CHEM-ROD—Lightning Eliminators & Consultants
CIPROS—Lynn-Arthur Associates
CITADEL—Fujitsu Ten
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COMPUPAGE—Paging Products International
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...D...

DB HOST—Decibel Products
DIAMONDTEL—Mitsubishi Electronics America
DIGI-T—Decibel Products
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DISSIPATION ARRAY—Lightning Eliminators & Consultants
DSD—Decibel Products
DURAVOLT—Photocomm
DYNASTY—Johnson Controls
DYNASTACK—Johnson Controls

...E...

EAR—Com-Ser Labs
EAR COM—Centurion International
EASIAX—Andrew
EASY LINK—IDA
EASY TALK—Nady Systems
ECLIPSE II—The Antenna Company
ECONOGLASS—The Antenna Company
EDACS—Ericsson GE Mobile Communications
EMREC—Torfino Enterprises
ENERGYLINK—db Mobile
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ENVIRO BUILT—Enviro-Buildings
ENVIRO-COMM—Enviro-Buildings
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EZ TRAC—The Genesis Group
EZ WATCH—The Genesis Group

...F-G...

FAST—Television Equipment Associates
FERRUPS—Best Power Technology
FLEET-TRAK—Navigation Data Systems
FORTRESS—Best Power Technology
GINA—GRE America
GLASLINK—db Mobile
GPS BRAIN—Magellan Systems

...H...

HARD HAT—Decibel Products
HELIAX—Andrew

...I...

IAP—Positron Industries
INFO I—Com-Ser Labs
INFO II—Com-Ser Labs
IN COMMAND—Celltech Cellular Information Systems
INTERCEPTOR—Statistical Control Systems
INTERTALK—Catcom Systems
ISIS/CD—CSC Intelicom
ISIS/CELL—CSC Intelicom
ISIS/GSM—CSC Intelicom
ISIS/LD—CSC Intelicom
ISIS/NN-CSC Intelicom
ISIS/PAGE—CSC Intelicom
ISOBAR—Tripp Lite
ISOPLEXER—Decibel Products

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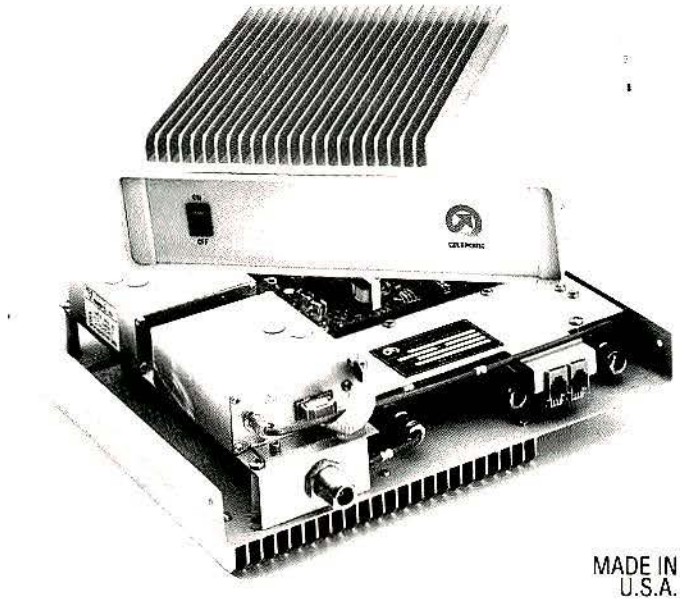
JTK—Jensen Tools
K2+—The Antenna Company
K2+KLIP—The Antenna Company
KATHREIN—Scala Electronic
KULDUCKIE—Larsen Electronics
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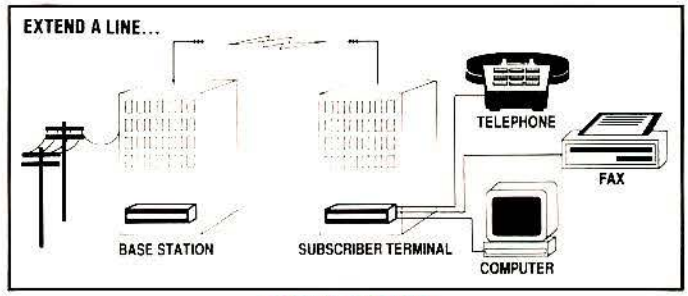


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LIGHTBRIDGE—Decibel Products
LOGOS CALLBACK—Logotronix Communications
LOGOS DX—Logotronix Communications
LOGOS ES1—Logotronix Communications
LONG RANGER—The Antenna Company
LUXCEL—Drive Phone

...M...

MACPAGE—Ex Machina
MAILNOTIFY!—Ex Machina
MARK II—Mobile Mark
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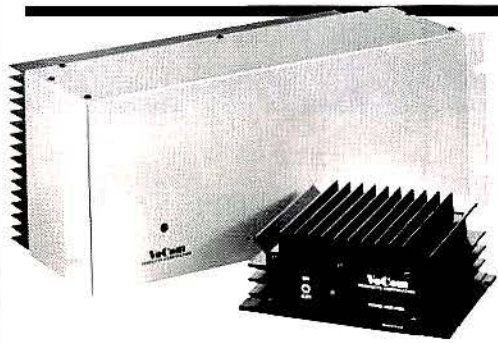
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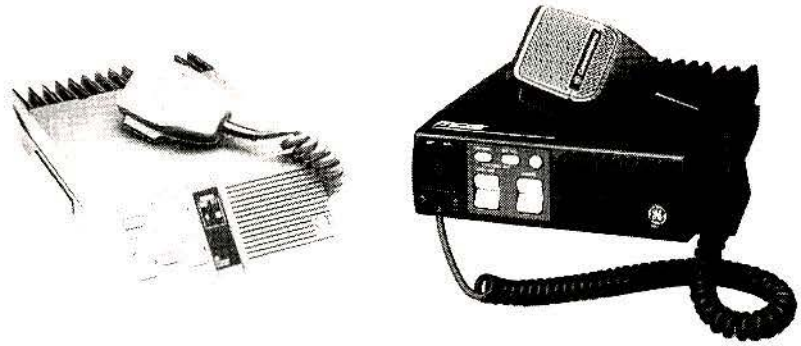
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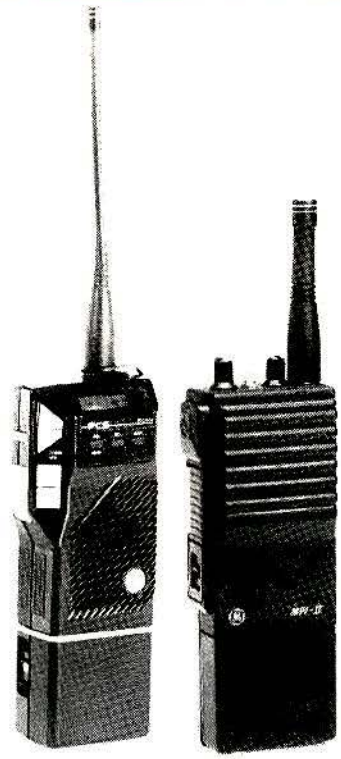
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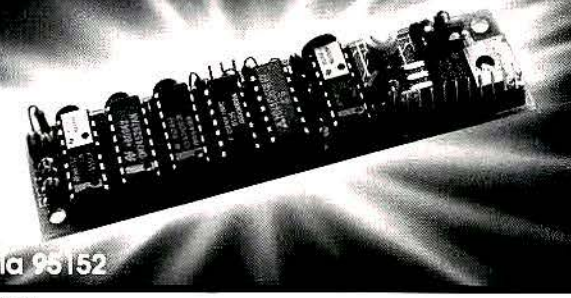
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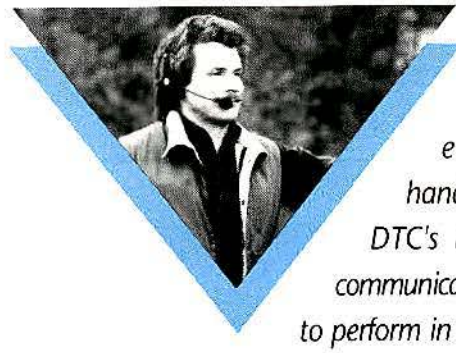
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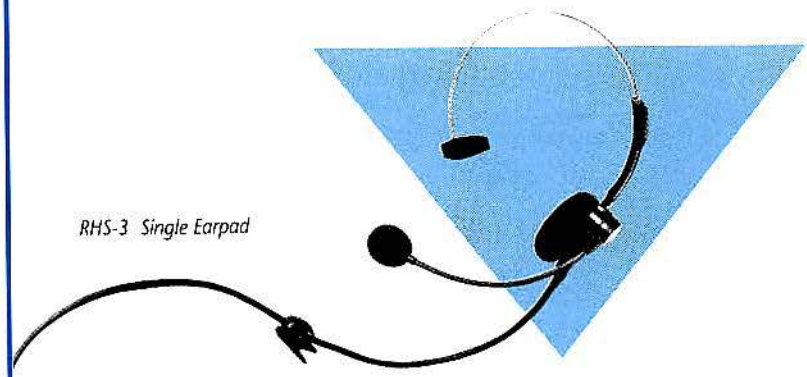
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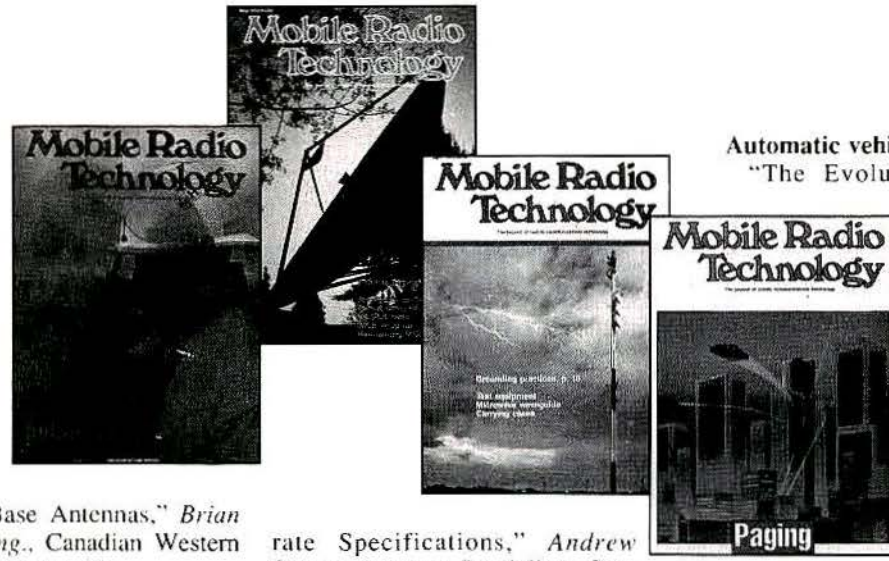
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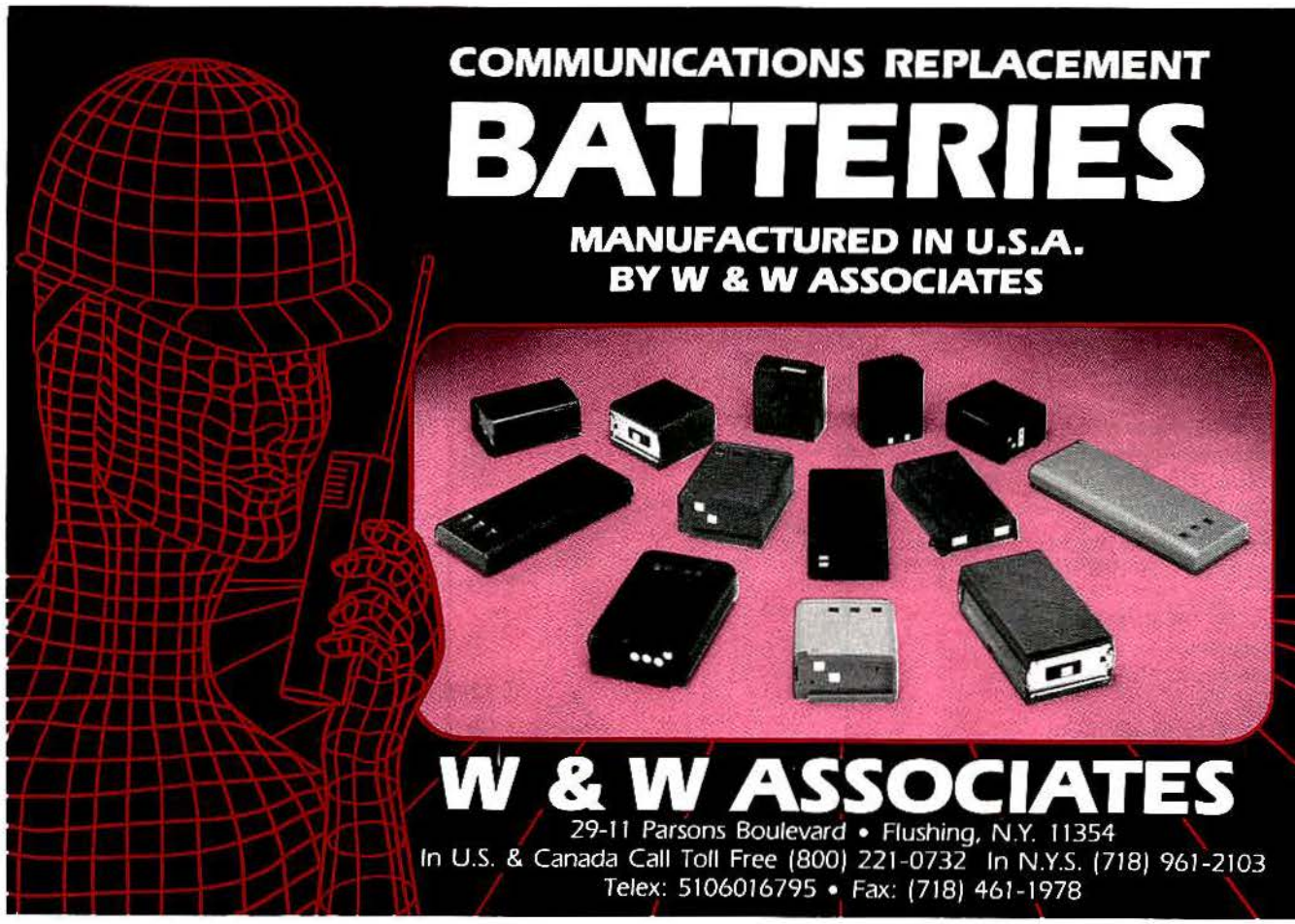
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"Paging Encoders Steer Public Safety Transmitters," *Greg Sprehn*, August, page 20.

"ERMES: The Next Generation Paging Code?" *James W. Marion*, NEC America, September, page 22.

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"FCC Deregulation and Technician Certification," *Al Rodney, CET*, May, page 20.

Remote control

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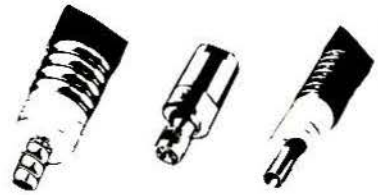
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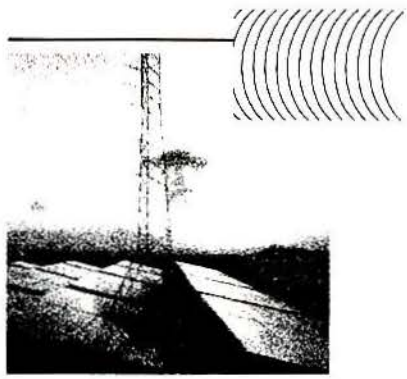
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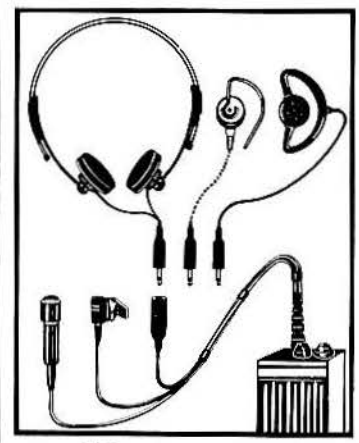
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SMR operators file multiple license applications

By Alan S. Tilles, Esq.

In response to expansive FCC license application filings by Advanced Radio of Florida and Dial Page, numerous 800MHz specialized mobile radio (SMR) system operators have filed ESMR-type applications.

ESMR (enhanced specialized mobile radio) refers to trunked radio communications systems configured with low-power, low-elevation repeater sites that allow frequency reuse with a wide coverage area.

Wide-area SMR applications have been filed by Transit Communications (Atlanta); Air Link (Florida); U.S. Digital (Mid-Atlantic); Dispatch Communications (Mid-Atlantic); Johnson Communications (Central Florida); CenCall (Colorado); Advanced MobileComm (Upper Midwest); and Industrial Communications and Electronics (New England).

More applications are in process. Operators of systems that have been "short-spaced" are worried that short-spacing waiver applications that are engineered on the basis of a 40dBμ/30dBμ coverage-to-interference contour and that do not use the actual terrain between the co-channel stations will cause significant interference.

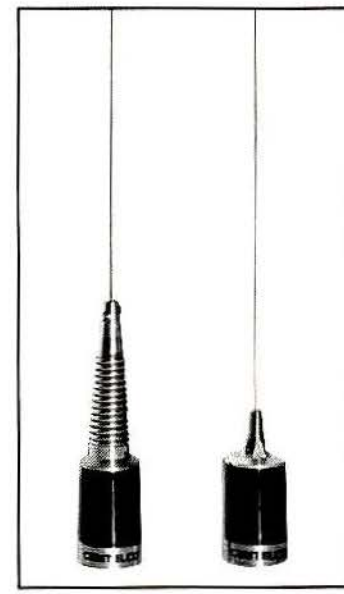
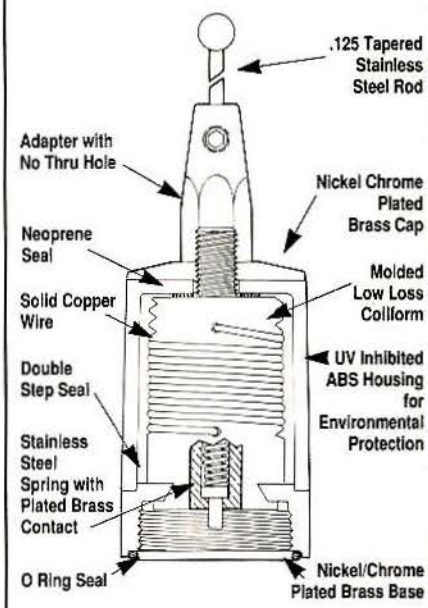
The most expansive applications filed to date are from Fleet Call and Transit.

Transit has filed a waiver request to license 233 800MHz SMR transmitter sites in 12 states. At each site, Transit requests all of the frequencies for which it currently is licensed in Atlanta and that can be reused at the new site on a non-short-spaced basis.

Transit requests as many as 149 channels at some of the sites and

Tilles, *MRT's* regulatory consultant, is a partner in the law firm of Meyer, Faller, Weisman and Rosenberg, P.C., Washington, DC.

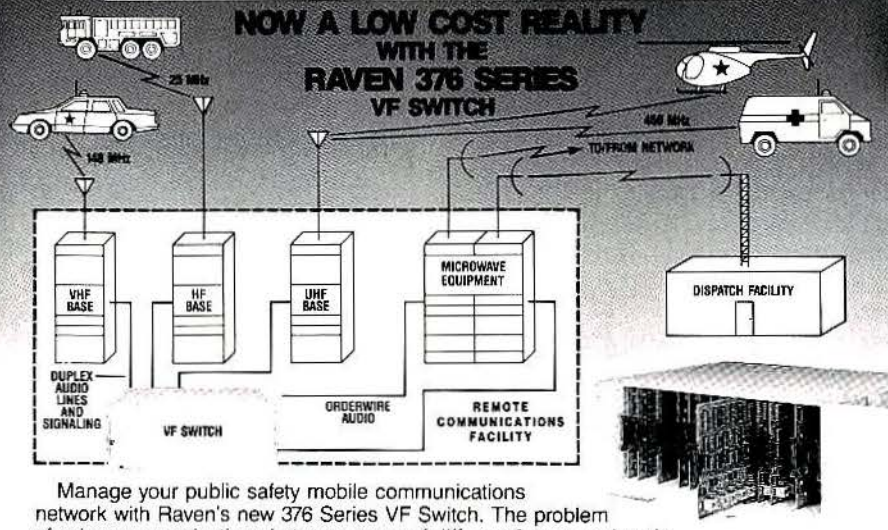
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claims that its Atlanta area aggregate loading should apply to each of the new sites. The transmitter sites extend from Virginia to Florida and west through Louisiana.

Fleet Call has filed applications for more than 700 SMR sites throughout the United States. Each application requests five channels for a digital system. The applications are for systems located at least 25 miles from the center coordinates for an 800MHz waiting list area.

The result of the filings has been significant confusion in the SMR industry. Many operators are seeking to file wide-area applications as soon as possible to protect their system footprints, and other operators are looking to the FCC to bring order to the chaos.

Meanwhile, the FCC has issued a Notice of Proposed Rulemaking seeking to permit SMR applications to apply for extended implementation authority by rule instead of by waiver.

The turmoil means that operators throughout the country, regardless of

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market size, should review their current systems and business plans closely and react quickly to ensure that the existing systems are protected and that growth remains feasible.

* * *

No more end-user licenses

There is a collective sigh of relief from SMR operators that no longer are required to license their end-users.

Nevertheless, remember that certain types of end-users (with control station antennas more than 20 feet high or located in radio quiet zones designated by the FCC) still must be licensed individually.

Furthermore, conventional SMR licensees should license the number of new end-users on the system on the SMR licensee's backbone repeater license.

SMR operators now must demonstrate a 6-month average of loading to meet the FCC's requirements. Nonetheless, the ability to count each mobile unit on each system where the unit regularly operates may ease this additional burden.

* * *

Refarming spectrum below 570MHz

For the rest of the private radio industry, the FCC offers 2½ inches of paper that proposes to refarm the private radio spectrum below 570MHz.

The comprehensive rulemaking proceeding subdivides the current bandwidths in two steps.

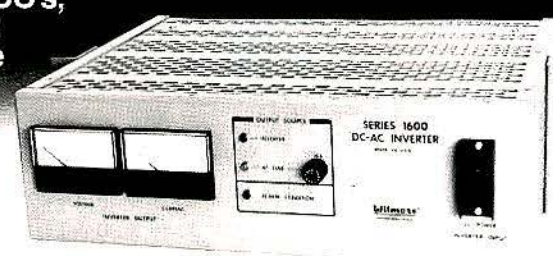
▶ *Step 1*—For the 421MHz-to-512MHz band, current 25kHz channels would be split into one 12.5kHz channel for existing users and two 6.25kHz channels.

▶ *Step 2*—The remaining 12.5kHz channels would be split into two 6.25kHz channels.

During each step, the existing user would be required to reduce its emis-

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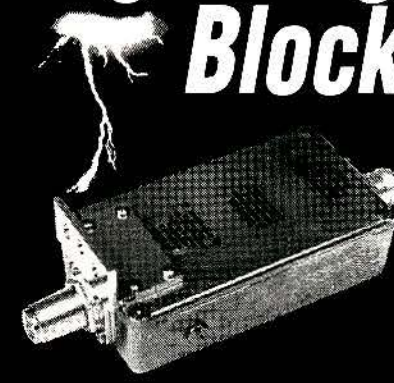
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sion bandwidth. The 150MHz-to-174MHz band would be subdivided in two steps, too, eventually creating 5kHz-wide channels.

The FCC's proposal would allocate more than 2,200 channels into four pools: SMR, non-commercial, public safety and general access. The current proposal would permit existing frequency advisory committees to continue coordination on the new channels.

Although the final channel splits will not take place for a decade, technicians will be faced with the task of reducing the bandwidth of existing radios where possible.

More likely, as current-technology radios age, narrowband radios will be purchased as replacements. Regardless, the opportunity to obtain channel exclusivity may provide sufficient fuel to the marketplace to accelerate the changeout, as entrepreneurs give users new, narrowband radios to "clean up" channels.

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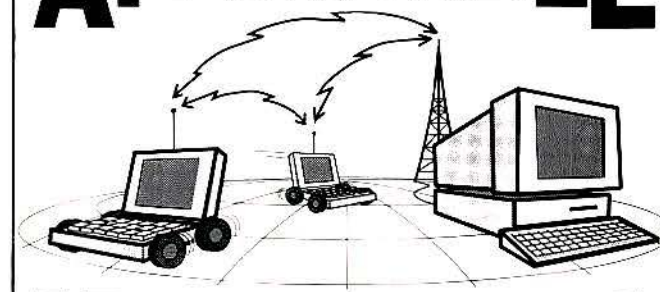
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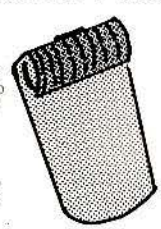
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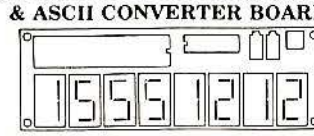
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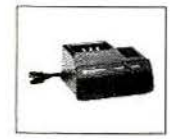


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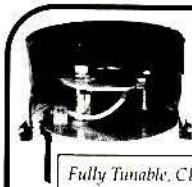
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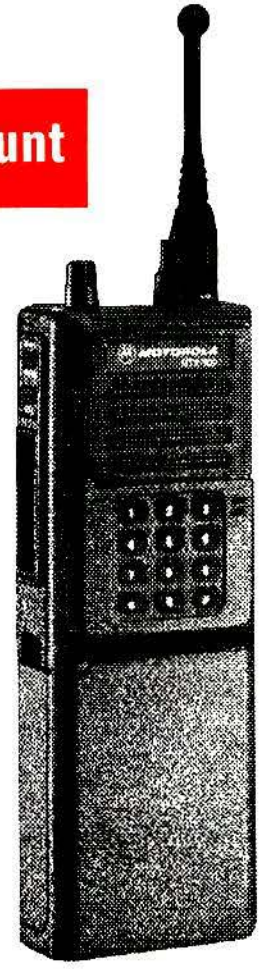
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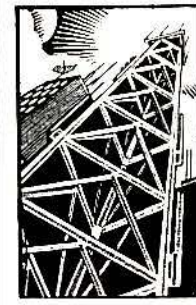
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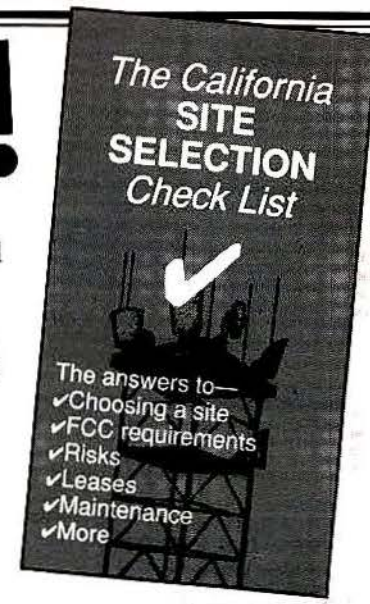
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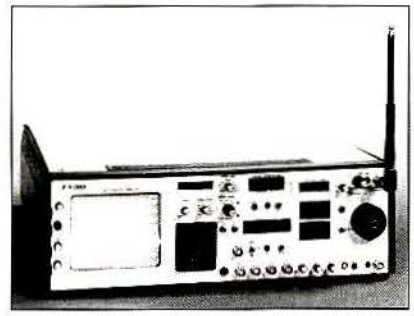
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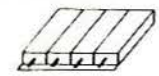
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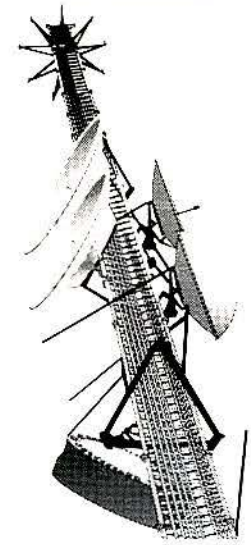
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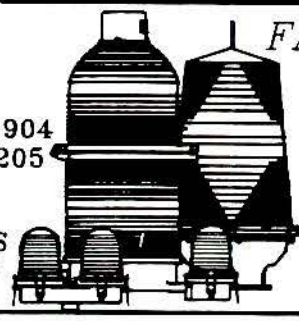
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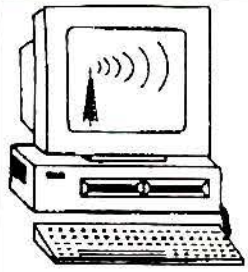
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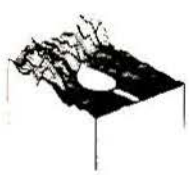
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GENERAL FEATURES: Highly integrated telemarketing, lead-tracking, proposal generation, SO, PO, AR, AP, GL, Payroll, dispatch scheduling, recurring billing and report generation modules • Up to 99 user-owned companies, with up to 999 departments and 2600 locations, each • Comprehensive password protection • Over 2.1 billion user-defined customer and vendor numbers • 6 user-defined customer reporting fields • Up to 46,000 employees • Automatic GL linking • Pop-up help screens • Built-in UNIX/XENIX, UNIX, VMS, ULTRIX, AIX and SUN operating systems. **PROTOCOL:** Includes sales/service order entry, purchasing and accounts receivable modules • Complete customer service facilities • Express menu provides direct access to hundreds of daily functions • Over 2,000 user-defined reports • 15 character user-defined item numbers • Up to 2600 serialized/non-serialized inventory locations per company • 8 user-defined price levels + exchange price and minimum selling price • 5 user-defined cost levels + sales cost and exchange cost • Package pricing • Package costing • Customer-specific special pricing • Item-specific special pricing • User-defined reorder points • Automatic parts requistioning • Automatic substitutions • Automatic stock transfers • Automatic bar-code indexing • Direct importing of pricing disks from Motorola, GE, Johnson, and others • Unlimited user-defined global pricing • 1296 sales tax codes, with 10 taxes each • 1296 user-defined terms codes • Unlimited customer, employee & inventory memos • Point of sale & cash drawer support • Automatically processes warranty claims and bills vendors • Automatic maintenance contract processing • Recurring maintenance contract billing • Tech productivity reporting • Sales commission reporting • Unlimited customers can be billed to a single account • 2700 line items per order • Orders can be entered by item number or description • On-line warranty and maintenance contract activations • Tracks up to 296 characters of system data, per serial number • Automatic job costing • Allows partial invoicing • supports multi-customer billing, from a single order • Automatically calculates UPS shipping charges • Automatically prints UPS COD tags • User-defined service alert periods • Unlimited user-defined failure codes • Unlimited user-defined fix codes • Serial number tracking by customer make, model, and 2 user-defined fields • Tracks customers by territory, lead source, travel zone, tax rate, terms code and SIC code • Automatic dispatch scheduling, based on 100 tech qualification codes and 2600 travel zones • FAX SO transmission • Prints unlimited service order, job card, PO, invoice, pick-list, statement and stock transfer copies • Dynamically updated tech calendar, work schedule and service status screens • Automatic service follow-ups • Automatically handles trade-ins, discounts and re-work • Complete return to stock and return to manufacturer inventory tracking • Allows perpetually open POs • Supports economic order quantity • Allows the creation of multiple POs from an open requisition list • Automatically prints/displays received PO distribution list • Full bar-code support • Supports recurring POs • FAX PO transmission • Individual & list-style cash receipts • User-defined aging periods • Comprehensive sales tax reporting • Cash drawer report • Tracks security and order deposits • Recurring billing. **E-XCEL:** Includes telemarketing, lead tracking & proposal generation • Supports over 2 trillion automatic & user generated lead numbers • Allows up to 99,999 contact sequences per lead • Tracks leads by lead number, customer number, name, address, contact name, phone number, telemarketer and follow-up date • Uses PROTOCOL customer, inventory, and pricing records • Dynamically updated appointment calendar • Daily appointment reports • Tracks average lead processing time & average days to close • Uses probability of close to project future income and inventory requirements • Productivity by telemarketer, salesperson and lead source • Prints to both quote forms and user-defined letterhead • Integrates with Word and WordPerfect mail-merge • Automatic future & periodic follow-ups • Supports up to 10 million active quotes • 99 user-defined quick-quotes • 10 user-defined telemarketing quotes • Unlimited packaged quotes • Unlimited quote text • 20 recalulate modes • Credit approval facilities • Comprehensive telemarketer compensation system • Automatic sales commission calculation • Quotes can be directly exported to PROTOCOL • Provides over 250 reports. **OPTIMA 11:** Includes SMR, PCP, RCC, MSA, RSA, TAS, voice mail & flat-rate recurring billing • Supports over 60 million systems • 1.6 million networks • 2.1 billion subscribers • Supports up to 4,000 user-defined rate codes per system • And up to 4,000 user-defined rate groups per system • Unlimited unit-specific rate structures • 1296 special toll, pro-rate and commission codes per system • 6 user-defined time zones per system • Direct controller, switch & terminal interfaces • Automatic data uploads and downloads • Automatic call record import and rating • Per minute toll rating, in up to 6 time zones • 1st minute, 2nd minute and 3rd minute - toll rating, in up to 6 time zones • Tiered pricing • 16 billing detail levels • per unit, per system & per network free minute trickle-down • Minimum per call charges • User-defined incomplete call discard times • Auto-adds up to 999 units • By-agent number inventories • Comprehensive agent commissioning • Rental inventories •Auto-depreciation • Bills in any language or currency • Add-delete revenue and loading reports • on demand invoicing • Time/date stamped number exchanges • Automatic pro-rate invoicing • Multiple billing cycles,within a single rate group • Unlimited trial billings • Supports global credit holds and activations/deactivations • Concurrent and double-sided laser printing support • and lots more!

...Now, for the Five Best Reasons

1. FREE DEMO SOFTWARE... That's right, you can take a full-blown, all-out, no-holds barred test drive, absolutely free!

In fact, if you go on one of our personal Demo Tours, we'll give you up to $1,500 in purchase credits, just for taking the time!

2. $3,000.00 TRADE-IN... Why live with software that doesn't do the job? Trade it in on PROTOCOL, E-XCEL or OPTIMA II, and we'll give you a purchase allowance of one thousand dollars per module. - That can quickly add up to a $3,000.00 windfall!

3. ONE STOP SHOPPING... In addition to software, we can supply all of the components necessary to integrate your existing hardware & data into a powerful multi-user management system.

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4. SATISFACTION GUARANTEE... Our exclusive ninety day satisfaction guarantee ensures that your decision to choose Micro-Quick is always the right one!

5. TOTAL SUPPORT... All Micro-Quick products include one full year of toll-free telephone support and free updates. We also include UNITRIX V, a one key-stroke solution to the management of users, terminals, printers, modems and tape back-ups.

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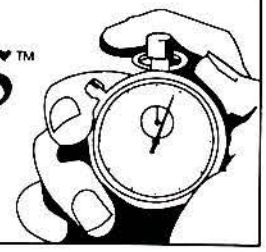
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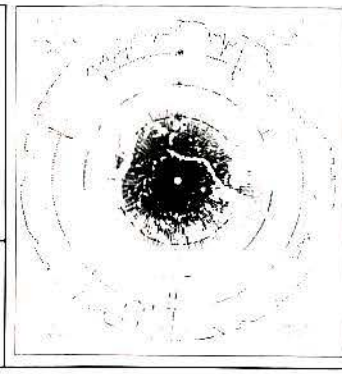
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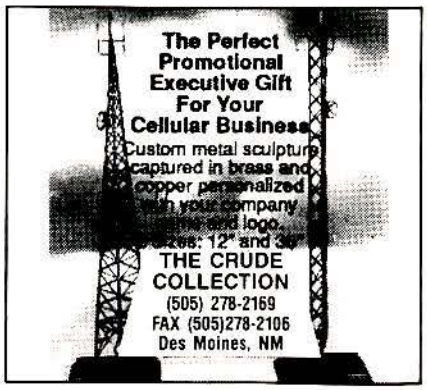


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Dedicated to providing quality service, Raytheon Services Nevada is a prime contractor for the U.S. Department of Energy. We have an immediate opening for an experienced individual in our Nevada location. As Communications Engineer, you will provide supervision and guidance related largely to overall objectives, critical issues, new concepts and policy matter. Other responsibilities will include consulting with supervisor concerning unusual problems and developments as well as performing related work as required, including acting as project leader for designers, drafters, technicians and other engineers. The successful candidate will have experience in VHF, UHF and digital microwave radio systems. Experience in data communications, networking, SCADA, EDACS Trunking, and system engineering is a plus. Applicants must possess a BSEE/BSEET with eight or more years of experience.

Qualified applicants should submit their resume, including salary history to: Personnel Administrator, Raytheon Services Nevada, Department 18, P.O. Box 95487, Las Vegas, NV 89119-5487. U.S. Citizenship required. An Equal Opportunity/Affirmative Action Employer.

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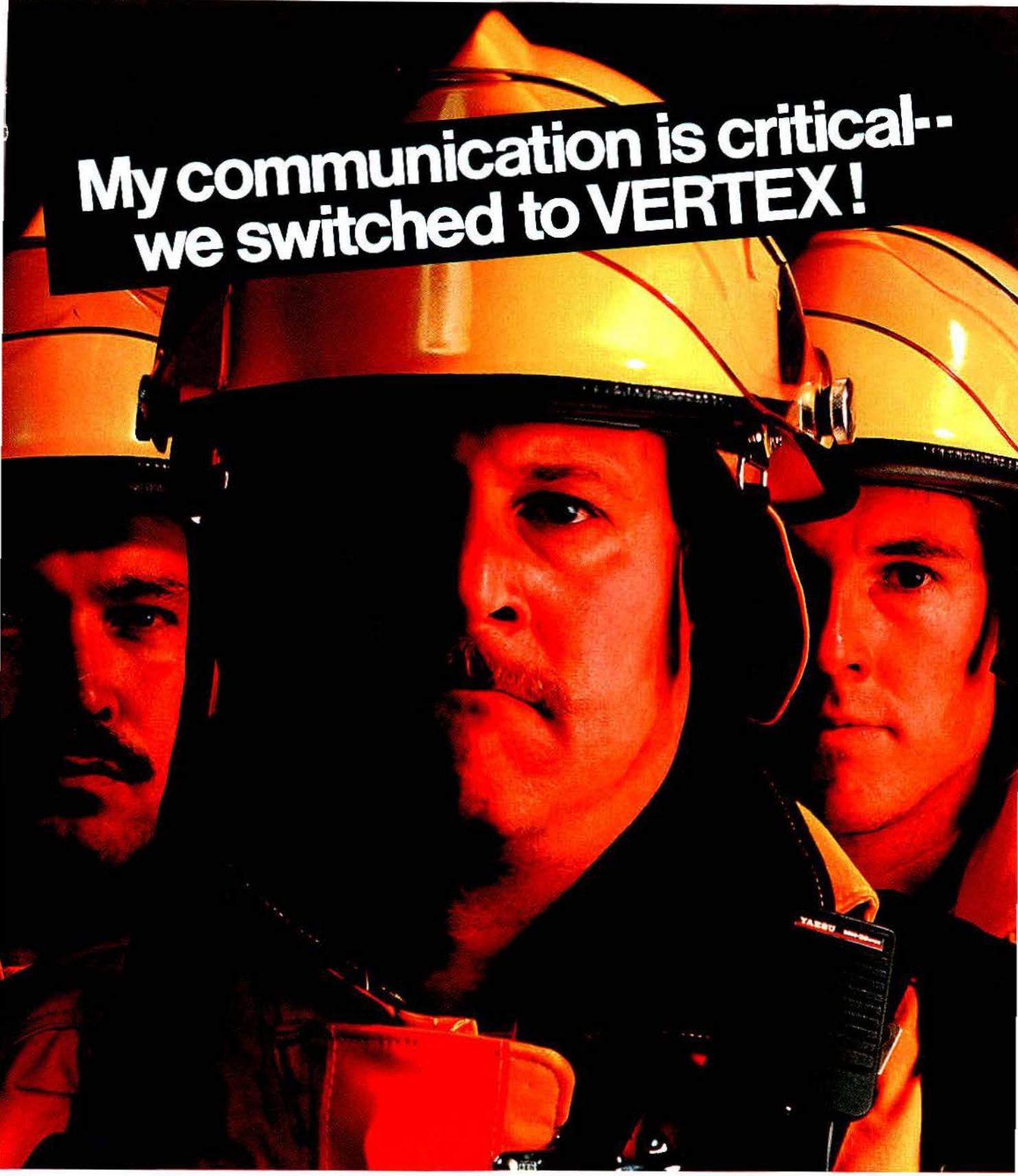
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Ad index/hot line

Company	Page Number	Fast Fact Number	Advertiser Hot line
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Air Comm	117	146	602-275-4505
Alexander Batteries	60	45	515-423-8955
America West C&E Inc.	123	163	800-542-WEST
The Antenna Farm	114	134	800-255-6222
The Antenna Specialists Co.	IFC	1	216-349-8400
Astron Corp.	43	30	714-458-7277
Automation & Electronics Engr.	117	144	800-527-4596
Avcom of Virginia	84	73	804-794-2500
B&C Communications Inc.	113	132	201-670-1985
Bee Electronics Inc.	96	92	708-345-0337
Bendix/King, Mobile Comms Div.	41	29	913-842-0402
Bird Electronics Corp.	110	117	216-248-1200
Bomar	38,114	26,137	800-526-3935
Bramco	92	84	513-773-6255
California Radio	113		800-231-0103
Cartwright Communications	19	16	513-489-1755
Celwave	20-21	17	800-321-4700
Centurion International Inc.	3,116	25,143	800-228-4563
C.E.T., Inc.	122	160	800-445-0297
Chargeguard Corp.	117	147	800-458-3410
Chase Manhattan Bank	104		
Cimarron Technologies	25	19	800-487-7184
David Clark Co., Inc.	8	8	508-751-5800
Coded Communications	9	9	800-228-6367
Combined Technologies Inc.	90	81	513-595-5900
Communications Associates	99,117,	96,145	800-435-9313
Communication Instruments	126	168	800-288-8223
Communications Data Services	123	162	800-441-0034
Communications Specialists	BC	3	800-854-0547
Compuquest Inc.	116	141	800-722-2353
Comsearch	121	156	214-680-1000
COMTELCO Industries Inc.	107	110	800-634-4622
Connect Systems Inc.	13	11	800-545-1349
Control Signal Corp.	16	13	303-989-8000
CPI Communications Inc.	18	15	800-869-9128
CTI Inc.	76	62	601-287-8081
Curtis Electro Devices, Inc.	110		800-332-2790
Cushcraft/Signals Corp.	37,92	12,85	800-258-3860
Cushman/KNS Electronics	121	157	408-432-8100
Cybersym Control Sys	123	164	703-268-5400
Data Signal Inc.	68	54	912-883-4703
Decibel Products, Inc.	45	31	214-631-0310
Diablo Communications, Inc.	120	155	510-236-3700
Dictaphone Corporation	73	59	800-447-7749
D&L Communications Inc.	96	91	219-484-0466
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Eagle Wichita	94	88	316-942-5100
Earmark Inc.	108	111	203-777-2130
EMR Corp.	103	101	602-581-2875
Falcon Tower Fabricators	122	161	915-658-7155
Fanon Courier	112	127	800-345-1354
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Frequency Management	112	129	800-800-9825
Gamber Johnson	74	60	715-344-3482
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Doug Hall Electronics	94	89	614-261-8871
Harger Lightning Protection	100	97	708-362-4848
Henry Radio	107	109	800-877-7979
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Hustler Inc.	88,89	79,80	800-327-9076
Hutton Communications	66	52	800-442-3811
Hy-Q International	119	140	606-283-5000
ICOM America	53	37	206-454-8155
IDA Corp.	97	93	701-280-1122
IFR Systems, Inc.	32A-B,33	23	316-522-4981
International Crystal Mfg.	93	87	405-236-3741
JaBRO Batteries Inc.	105	105	800-323-3779
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Maxrad, Inc.	27	20	708-595-3933
Mechem Electronics	111	126	703-373-3888
Mecom '93 C/O Kallman Assocs.	87	78	201-652-7070
Meridian Comms/Diablo Comms	55	40	818-888-7000
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MX-COM Inc.	7	7	919-744-5050
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Norton Engineering	126	167	703-938-5745
Omnicron Electronics	108	112	203-928-0377
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Pekaar Communication Inc.	116	142	201-772-0704
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Pirod, Inc.	61	46	219-936-4221
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Sharp Communication	114	136	800-548-2484
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Simrad Inc.	58	43	800-426-5565
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Standard Communications	77	64	800-767-6695
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Tait Electronics USA Inc.	40	28	713-984-8684
TEAC America, Inc.	91	83	213-726-0303
Telepath	119	151	800-292-1700
Telepoint Inc.	95	90	310-289-0222
Tower Structures Inc.	80	68	619-421-1181
Transcrypt International Ltd.	5	6	800-228-0226
Trident Micro Systems	67	53	800-798-7881
Trilithic	85	75	317-895-3600
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TWR Lighting Inc.	122	159	713-973-6904
TX RX Systems Inc.	46	32	716-549-4700
Uniden Corp. of AM-MSG Inc.	65	51	817-858-3300
Unipage	75	61	800-367-2864
Valmont Industries, Inc.	62	47	402-359-2201
VCP International Inc.	54,86	38,77	800-527-9366
Vega, A mark IV Company	1	4	818-442-0782
Vertex/Yaesu USA	IBC		213-404-2700
Vocom/RF Corporation	98	94	800-USA-MADE
Wacom Products Inc.	86	102	817-848-4435
WAVETEK	63	48,49	800-245-6356
Western Towers	76	63	915-658-6539
Wilmore Electronics Company	109	113	919-732-9351
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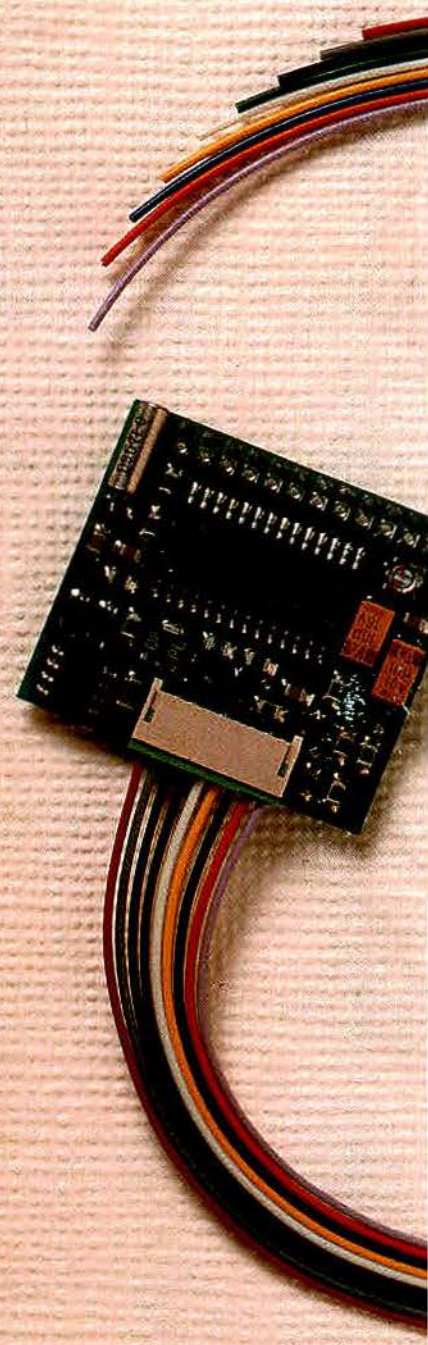
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DCS-23 Microminiature DCS Encoder-Decoder

Compatible with all digital continuous tone coded squelch systems used in Land Mobile radios such as: "Digital Private Line", "Digital Channel Guard", "Digital Call Guard", etc.

- Microminiature in size, 1.36" x 1.18" x .25" to fit inside all mobile units and most portables
- Totally immune to RF
- Uses crystal controlled CMOS microprocessor for low voltage operation
- Three pole high pass filter included to remove tone from received audio
- All connections made with microminiature plug and socket with color coded wires attached
- Double sided tape supplied for quick mounting
- All industry standard digital codes are field programmable with simple PCB jumpers
- All 512 octal codes can be programmed
- Simple field programming of both transmit and receive data polarity
- Operates over full temperature range of -30°C to +65°C
- Easy hookup with external diodes for multi-code encode or decode
- Powered by a very low voltage of 6vdc to 20vdc @ 8ma.
- Full one year warranty when returned to the factory for repair
- Immediate one day delivery



Decode

- Sensitivity better than 15mv
- A signal to noise ratio of better than 4db Sinad reliably operates decoder
- Decode time is 171ms (one word length)
- Decode input Z is 60k, AC coupled, for easy discriminator hookup
- Open collector transistor muting can be programmed for ground to enable or ground to mute
- Automatic hookswitch monitoring when mike is removed from hanger
- Automatic squelch tail elimination by turn off code detection

Encode

- Golay 23 bit digital word sent at 134.4 Hz data rate
- Turn off code of 134.4 Hz sine wave for 180ms sent to eliminate receiver squelch tail
- Output Z is 2.2k, AC coupled, and adjustable from 0-3v
- Open collector high current transistor for P.T.T. keying
- Test code to set transmitter modulation level included

$59.^{95}$ each

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Circle (3) on Reply Card